

Guide Book
FOR THE
EDISON INSTITUTE
MUSEUM
AND
GREENFIELD VILLAGE

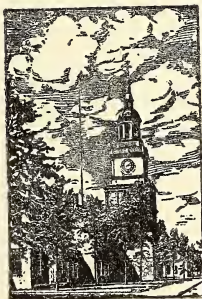




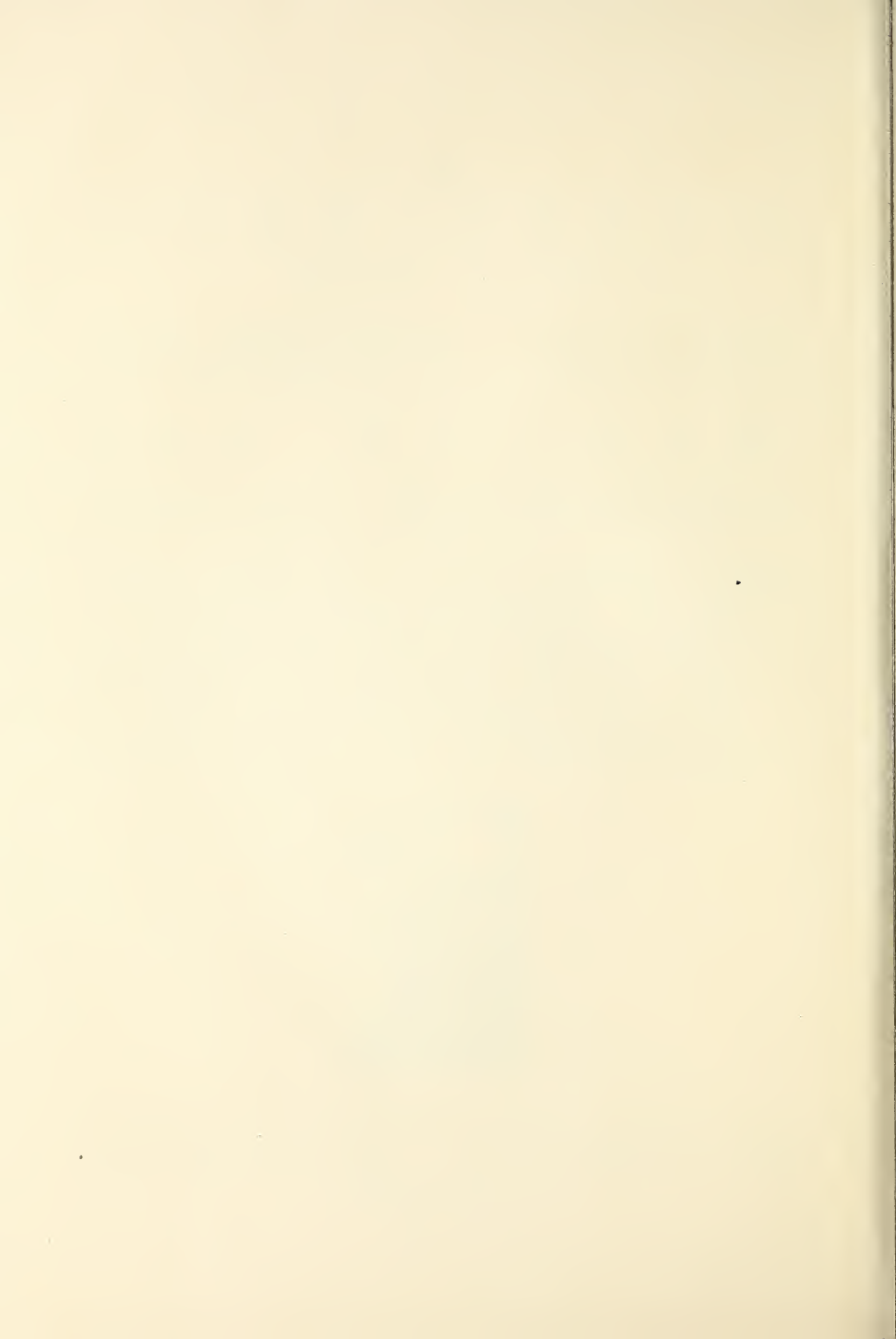


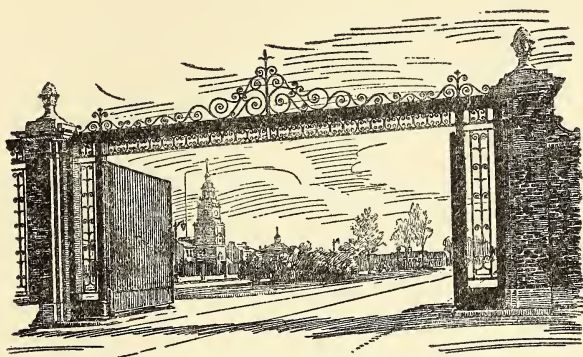
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F O R T H E
E D I S O N I N S T I T U T E
M U S E U M *a n d*
G R E E N F I E L D V I L L A G E

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D E A R B O R N , M I C H I G A N
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Entrance Gates, Village Road, Dearborn

THE EDISON INSTITUTE

TWO hundred acres at Dearborn, Michigan, have been set aside for an educational project which reflects the ideas of its founder, Henry Ford. The name "*Edison*" typifies the spirit of the institution. Mr. Ford has named it after his friend *Thomas A. Edison*, who has been an inspiration to him and many others in his untiring work. Serving the institute is a *museum* which is really a textbook of human and technical history. The *museum* is intended to minister to the student type of mind; that is, its purpose is primarily educational.

The *museum* building is fronted by a group of units containing classrooms, workshops, libraries, auditorium and executive offices. These buildings are architectural reproductions of Independence Hall, Congress Hall and

the old City Hall of Philadelphia. As the exhibits are not yet completely installed, the public is being given an opportunity to see the methods and labor involved in arranging the material.

Supplementary to this group and adjoining it on the east is *Greenfield Village*. Here the handicraft arts of the past are presented as they were practised in their original environment of public buildings and residences, which in their turn illustrate the development of architectural types.

Strangers often ask what prompted Mr. Ford to honor the memory of Edison. A brief answer is that Mr. Ford holds him to be our greatest American. Edison was also the first man to encourage him in his development of the motor car.

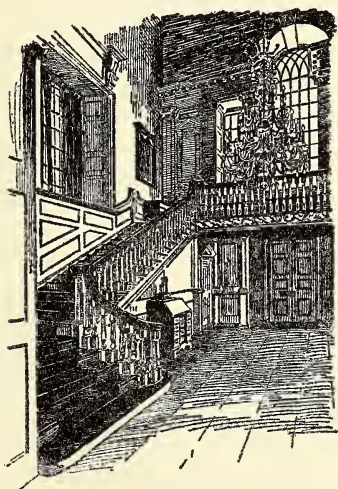
After going to Detroit from his Dearborn farm, Henry Ford worked his way up to the position of chief engineer of The Edison Illuminating Company of Detroit. On August 11, 1896, he attended an Edison convention at the old Manhattan Beach Hotel at Manhattan Beach, New York. There he made Edison's acquaintance, and was pointed out by Alex Dow of The Detroit Edison Company as the "young fellow who has made a gas car." Edison immediately became interested, and Mr. Ford was motioned to sit next to him and explain the gas engine and the car in detail. After a series of questions, which Ford answered, Edison brought his fist down on the table with a bang and said:

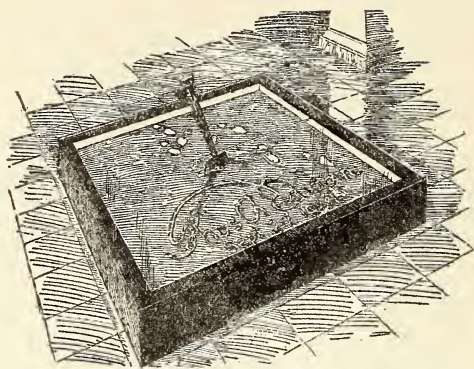
"Young man, that's the thing. You have it! Your car is self-contained and carries its own power plant."

"That bang on the table," said Mr. Ford, "was worth worlds to me."

Thus began a lifelong friendship between those two men that is memorialized in *The Edison Institute* and the *Menlo Park* compound. Both are a tribute of respect and admiration for Edison's life and work, and at the same time they cast the spell of Edisonian inspiration over all who enter their doors.

THE
MUSEUM





Cornerstone, Edison Institute Museum

THE MUSEUM

AS THE visitor passes through the entrance lobby of the museum, on his right and left are chambers duplicating the two in Independence Hall—that on the right the room in which the *Declaration of Independence* was signed; that on the left the *Supreme Court Chamber*. These chambers now contain Philadelphia furniture of the Eighteenth Century. Directly ahead, inclosed by a glass case, is the "cornerstone." It was dedicated on September 27, 1928, when Thomas Alva Edison, to symbolize the union of *Industry* and *Agriculture*, thrust the spade of Luther Burbank into the wet cement; then imprinted his footsteps and inscribed his name—leaving in the concrete a memorial for all time.

LIGHT'S GOLDEN JUBILEE

During the celebration of the fiftieth anniversary of the invention of his first practical incandescent lamp, October 21, 1929, the front portion of the museum, consisting of the two front chambers and the arcade to the left, was the scene of a formal banquet. Prominent people from all parts of the world attended. The chambers were lighted by candles in the Colonial chandeliers. After the re-enactment in restored Menlo Park of the scene 50 years earlier, when the first successful incandescent lamp was lighted, electric lights were switched on in the museum for the first time. Events of the evening were broadcast to hundreds of thousands of listeners.

Arcades connect with reproductions of old City Hall in Philadelphia on the right and Congress Hall on the left, while corridors, themselves serving as exhibition halls, connect all these units with the great exhibition hall at the rear. Opening on the arcade at the left is the Edison Institute Theater, in which many historic events and famous inventions are relived through play productions and technical lectures, and on the right, balancing the theater, are the classrooms of the Institute's *high school*.

MAIN EXHIBITION HALL

The main exhibition hall covers approximately eight acres. The hall is indirectly illuminated, lights being concealed at the base of the skylights. Ornamental grills around each column are hot water radiators. The hall has three major divisions representing the three main industrial arts: *agriculture, manufacture and transportation*. On the left are the *agricultural* and household arts exhibits. The central portion of the hall is devoted to *manufacture*, displaying a unique power exhibit, including steam, combustion and electric devices; to the right is the *transportation* exhibit.

When the hall is completed, teakwood will cover the entire 350,000 square feet of floor space. The flooring has been laid in the herringbone design, the boards being dovetailed together and laid on a mastic base.

AGRICULTURE

The *agricultural* section contains farm implements arranged in their evolution, the displays being placed to trace the growth of a season's crop. Beginning with implements used in preparing the soil, the sequence shows implements used for planting seed, for cultivating, for harvesting and, finally, for the actual preparation of the crop for market.

Here is a rude wooden plow of the Asiatic type, with a roughhewn log as its beam, a metal-tipped share and the jaws of oxen as its mouldboard; here are plows with mouldboards sheathed in saw blades, and patented plows—walking and riding—from the Civil War period on, with shares of cast iron and, finally, of chilled steel. Here, too, is the harrow, which rivals the plow in antiquity, from the earliest "bush" types, with square and wheel frames of wood and simple wooden pegs as tines, to the spring-toothed and multiple-disc models of modern times.

Many planting and harvesting devices, eloquent of the ingenuity of early American farmers, are shown; scythes, from the first rough metal blades affixed to a tree branch to the cradle scythes—and their mechanical successors, the mowing and reaping machines. There are specimens of Ambler's mowing machine, patented in 1834; a reaper built in the Globe Iron Works in Brockport, New York, in 1848; and a reproduction of the original McCormick reaper—one of the first commercially successful types.

Illustrative of the preparing of crops for market are many flails and mechanical threshing machines, such as the "ground-hog" thresher of a hundred years ago; the horse-powered devices, the portable and skid types, and the engines that enabled steam power to be applied to threshing operations. Here are the Mills engine of 1877 (50 years ahead of its time in the use of superheated steam and forced draught) and the Westinghouse vertical agricultural engine used by Henry Ford in the threshing season of 1882.

Among the agricultural curiosities is a collection of hay forks, some with auger-like prongs and others built on the principle of the iceman's tongs. Corn huskers

and ensilage-cutters abound. There are various treadmills, horse-operated, and even the dog (or trained sheep) treadmills devised to relieve the farmer's wife of the drudgery of operating plunger churns. Of the churn itself there are many specimens, in wood and pottery—plunger, rocker, barrel, paddle and other types—and there are examples of various early cheese presses.

As by-products of the truck-farm, herbs were grown. An apothecary shop, completely equipped, teaches the visual lesson of how these herbs were put to practical pharmaceutical uses.

The development of flour milling is traced from earliest times, through the crude Indian stump-and-stone devices, the mortar-and-pestle crushers and other primitive hand-types to the European water-powered type represented by a clumsy but effective Roumanian gristmill.

Coincidentally with the clearing of the land for the sowing of crops, the lumber industry sprang into being and out of it came the wood-working arts, depicted here not only by the tools and machinery they evolved, but a characteristic turner's shop, in which early home furniture was made, and a cabinetmaker's shop with specimens of furniture of the Georgian period. From 1840 on, machine-powered tools came into use, and the various types of fret- and hand-saws with which the over-ornate home furniture of Civil War days was made are shown.

The textile display visualizes the major steps in the preparation of flax, cotton and wool, as well as all types of equipment used in making cloth. Also, there are pieces of finished needlework, washing machines, sewing machines and ironing equipment. Exhibits of interest are the model of Eli Whitney's cotton gin principle and the first practical Singer sewing machine (1854).

The evolution of spinning and its sister art, weaving, is here readily traced from prehistoric times through primitive spindles, wheels and distaffs to modern instruments.

Here, too, is traced the evolution of the flatiron from its crude beginnings through the ingenious mechanical contrivances and the camphene, kerosene and charcoal-heated irons to the modern electrical irons that have robbed the comic artists of one of their favorite objets

d'art in depicting the joys of domestic strife, and, of course, of those household implements inevitably associated with the flatiron—ironing boards, mangles, washboards, washtubs and washing machines, as well as fluting irons and crimping machines.

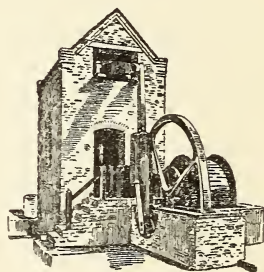
MANUFACTURE

The second division, *manufacture*, begins with a steam engine display. Throughout the back section can be traced the development of modern efficient steam power. The earliest engine in the exhibit is of Newcomen design, known as a Newcomen atmospheric pressure engine. It is a reciprocating engine of the walking beam type, developing 11 horsepower, and was used to pump water out of an English coal mine. Serving the engine is a "Haycock" or spherical boiler, so named because it resembled an old-fashioned English haycock. This was the earliest type of boiler used to generate steam to operate engines.

The engine directly in front of this is a later type of atmospheric pressure engine with an added invention, a separate condensing chamber commonly called a "pickle-pot" because of its shape, and also, it has the crank method of producing rotative motion from reciprocating motion. This design was called a "Windmill End Winding" engine, or a "whimsey," and was used to draw up coal from mines in England, developing about 19 horsepower.

Alongside the "whimsey" is an early reproduction of a Watt, double-acting, rotative engine illustrating the "sun and planet" gear system. The flywheel has 296 wooden mortice teeth which drove two pinions 3 feet in diameter from the shafts of which motion was used for 43 metal working machines—machines used in lapping or polishing steel ornaments. From this the machine receives its name, "lap" engine. It has also an early type of Watt centrifugal governor.

The large engine at the rear of the adjoining bay is a single-acting, condensing, reciprocating pumping



engine, a type invented by Watt in 1765. This was built by Boulton and Watt in 1795, and in 1796 was put to work on the Bordesly Canal, in England, for the Warwick and Birmingham Navigation Co. It developed 45 horsepower and lifted 134,000 gallons of water an hour from a depth of 42 feet. Steam was supplied from two "Wagon" type boilers, so-called because of their shape. The cylinder bears the inscription Coalbrookdale, where the first coal-coke iron was successfully cast.

The engine in the right foreground is known as the Coalbrookdale Engine, a double-acting, factory-driving engine said to represent the steam engine as Watt left it. Its period is around 1800.

Next to the Coalbrookdale engine is an early design of the horizontal engine nicknamed the "lie-down" engine by people in the English coal mining district. This type was necessary for marine power because of the lack of headroom required by the old vertical engines.

The engine at the rear of the next bay is the latest type made by Watt. It is a single-acting condensing engine used by the Birmingham Canals Navigation Co. between 1812 and 1930, and shows the last Watt improvements, such as the jet condenser, the closed cylinder socket valves and the Watt parallel motion, to produce direct vertical power from the swinging walking beam.

The next group of engines is marine types. Two on the left are of the side-lever-acting, oscillating type developed by Murdock in 1800 and used on a side-wheeler boat on the river Thames between 1850 and 1860.

In the foreground are two types of small marine engines, the Watt Jr. and a walking beam type known as the "grasshopper" because of its similarity of design to the insect's body.

The tall marine engine on the right is a steeple compound steam engine—dated 1861—a type popular on vessels plying the waters of the Great Lakes.

The large machine at the left is a combination gas-steam engine—rated at 6,000 horsepower, weight approximately 750 tons. Nine of these engines were used by the Ford Motor Company to develop power when they produced the Model "T."

The electrical exhibit will include almost every type of electrical device developed for all three phases

of electricity, generating, distributing and consuming. One of the most complete units in the exhibit is the *W. J. Hammer collection* of 1,100 incandescent lamps. A recent addition is one of the largest incandescent lamps ever made. The glass bulb measures 20 inches in diameter and the very heavy tungsten filament consumes 50,000 watts. The average lamp used for ordinary home lighting is 40 watts. The big lamp consumes about 1,250 times that amount, or 67 horsepower.

This exhibit ties in with the evolution of the work of Edison's predecessors in gas lighting and arc lighting and with the great historic collection of lighting and illuminating devices, one of the most comprehensive in the country, which dates back to Egyptian and Roman times. Here are literally thousands of handwrought articles used for the creating and dispersing of artificial light: Eskimo lamps; ancient clay lamps; ceramic lamps; Betty lamps; lamps that burned whale oil, camphene, kerosene; store lamps, mine lamps, carriage lamps; petticoat lamps; hanging lamps and swinging lamps; tallow, wax and bayberry candles; rush lights; candleholders; candlesticks of wood, stone, bone, shell, glass and every known metal or combination of metals; chandeliers and sconces; tinder boxes and pistols; and all the gadgets associated with artificial lighting, such as snuffers, trays and matchholders.

We find here the evolution of the vacuum cleaner (which stems back through the carpet sweeper of "Brussels Carpet Days" to the corn brooms and brushes of the Colonists), of heating and cooking devices (open fireplaces, early baseburners and Franklin stoves; kerosene, gas and electrical ranges), of refrigerating equipment, and of mimeographs, dictaphones, typewriters, mailing machines and scores of other devices that constitute the familiar machinery of our everyday lives.

Among these is the camera. So we have the photography sequence, which shows the development of the camera through Edison's kinetophone and kinoscope, forerunners of motion and talking picture machines, to the modern equipment of the motion picture industry.

Back of this form of "graphic art" is the art of printing. So we have a chronological development of the machinery

of printing, shown in models of the wooden hand press of Blaeu, the Columbian hand press, the Washington hand press and the early platen presses operated by treadle, with representative works of the printing art in the form of broadsides, pamphlets and tracts, and numerous specimens of typography as well as early examples of type casting and type founding.

One exhibit includes a section of every cable stretched across the Atlantic, commencing with the first laid by Cyrus Field in 1858, which failed, and the second, laid by the Great Eastern between Ireland and Newfoundland, which was a success.

Here may be seen a few of Edison's many inventions. This display contains mimeographs, stencil machines and Ediphones. Most of his inventions, however, are exhibited at the restored Menlo Park laboratory in the village.

The works of the great physicists who preceded Edison in the field of electrical discovery and invention are not neglected in the museum exhibits. Nor are his great contemporaries overlooked—Nikola Tesla, Steinmetz, Westinghouse and others.

The evolution of the dynamo is traced through the early types used for plating and welding, the so-called "Z," "A" and "K" types of Edison, the dynamo belted to the steam engine, the Pearl Street Station and the turbine driven dynamos of today. The application and distribution of that power led to an entirely different set of inventions by Edison and others. Their evolution is seen in exhibits of conduits, insulated wire, fuses, cutouts, switches and the like, and of voltmeters, ammeters—all the devices by which current is measured, from the chemical meters to the modern instruments that register kilowatts used.

TRANSPORTATION

The section of the exhibition hall showing *transportation* displays will include all types of locomotion and will show reproductions of chariots found in ancient tombs, original primitive ox sledges, ox carts with solid wheels, and wagons and carriages of every description.

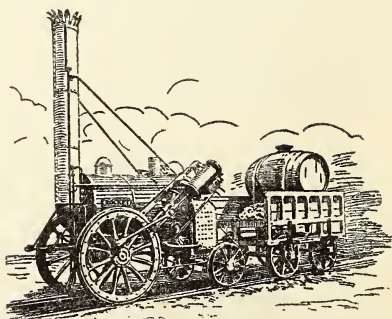
Power locomotion will be shown through gasoline, steam, and electric automobiles; airplanes, motorcycles, boats, bicycles and locomotives.

Of American-made horse-drawn vehicles, both those that are purely American in character and those of foreign derivation, there is a great wealth of fine examples. In the first class are included the Colonial gig, chaise and chair; the buckboard; the tin peddler's cart; the rock-away, a smart closed vehicle with an overlapping roof for the protection of the driver; and a beautiful example of coach, built by William Ross in 1760 and used by General Lafayette during his first visit to this country. In the second class are hansom cabs, broughams, victorias, landaus and the Cuban volante. There is also a full sequence of sleighs and cutters deriving from the earliest sled.

Paralleling this is a comprehensive display of fire-fighting equipment, through which the evolution of the fire engine is disclosed from the first crude devices pumped by hand and pulled by human leg-and-lung power, to the gorgeous horse-drawn and power-driven engines of our youth and the self-propelled motorized units of the automobile age.

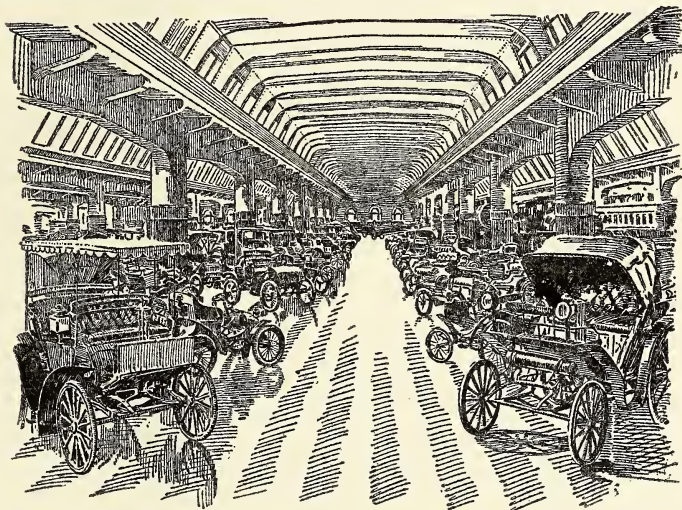
The exhibit contains interesting early coaches that mark epochal steps in the advancement of design and construction. A few of the more interesting are: the *Conestoga Wagon*, first seen in 1755, a purely American product made in Conestoga Valley in Lancaster County, Pennsylvania. It was in the "*Prairie Schooner*," as it was called in the next century, that civilization migrated westward.

Airplanes as an important phase of transportation are represented by a 1909 Bleriot; the "*Pride of Detroit*," which flew around the world; an Autogyro; Admiral Byrd's North and South Pole planes, a Fokker and a Ford.



The "Rocket" Locomotive

The track spurs in the museum floor contain the development of the locomotive, the earliest being a replica of the "Rocket" which was the first successful steam locomotive, built in England, October, 1829. The chronology then follows to the De Witt Clinton, built in 1831, the first practical locomotive in America. This is a reconstruction of the original. Following this are locomotives of the Civil War period—wood burners of 1860 and 1865—and one dating 1897. The largest engine



View of Transportation Section

in the exhibit, built in 1902, is the first to attain a speed of more than 90 miles an hour. A French engine built for narrow gauge tracks and a modern engine, 1915, complete the chronology.

Another exhibit is the old-style train. This has been restored to resemble the one on which the youthful Edison worked as a news butcher. "Sam Hill," a locomotive of the Civil War period, stands at its head. The baggage car contains a small laboratory with bottles of chemicals such as Edison used to experiment with; a hand press such as he used in printing the first newspaper published on a train—the *Herald*—is there. Two passenger cars comprise the remainder of the train, one of

them an original from The Bangor & Aroostook R. R.

On this train Thomas A. Edison and Mrs. Edison, escorted by the then President Herbert Hoover and Mrs. Hoover, Mr. and Mrs. Henry Ford and other guests, rode to Greenfield Village, October 21, 1929, to take part in *Light's Golden Jubilee* celebration and the dedication of the Edison Institute.

The evolution of cycling is depicted in an infinite variety of models, from von Sauerbronn's crude draisine or "Gentleman's Hobbyhorse," propelled without benefit of pedals, to the latest type of modern motorcycle, and including the "boneshaker"; the "phantom" of the 60's; the "spider" of the 70's; the high-wheeled racing "ordinaries" and "xtraordinaries" of the 80's, with small wheel behind or before; the so-called "safety" bicycles of the Twentieth Century; tandems, four-seaters and one freak, beloved of small boys, that has 10 seats.

In the bicycle exhibit, the visitor may see the largest and smallest bicycles ever built and used. Also, one may see many curious styles of cycle, such as the kangaroo, the star, the tricycle and the velocipede.

The automobile sequence is very comprehensive, both in its foreign and American types, with examples of the Daimler, the Benz, the Eisenach and other makes built from 1884 to 1902, a model of the first Isotta-Fraschini and an early Renault. The early American makes include the Winton, Haynes, Cadillac and Reo, various "electrics" and the steamers of Stanley, White and others. The story of the Ford automobile is told from Mr. Ford's first car, completed in 1896, through subsequent developments to the Model T, represented by the 15,000,000th Ford car, and the Model A, represented by the 20,000,000th, and including the Model K—the only six-cylinder model ever built in the Ford factories—as well as the famous Ford racing cars—the "999," the "Seven-by-Seven Opposed" and the "Model T Hill-climbing Racer" of 1910. Among the cars in the transportation exhibit that attract attention is Riker's "Bullet," a streamlined, skeleton car of ancient vintage which, powered by storage batteries, challenged all-comers (steamers, electric, gasoline powered cars, etc.) to a test of speed and won the first automobile race in this country.

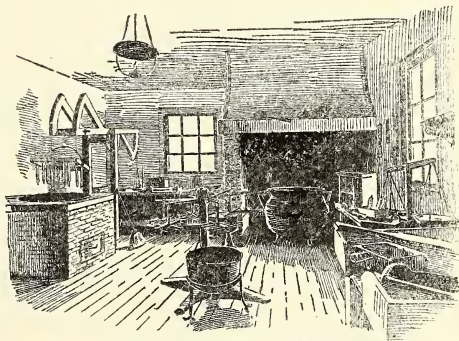
HANDICRAFT SHOPS.

Permanent structures in the museum are representative of Colonial shops.

In a corner of the exhibition hall stands a reconstruction of the historic *Caleb Taft Blacksmith Shop*, Uxbridge, Massachusetts. The shop contains one of the few remaining ox slings in which the ox was fastened and then lifted by a winch so the smith could shoe the beast. The poet Longfellow knew of this shop and occasionally visited it. Other articles in the shop include a wooden frame forge with hand-operated bellows, benches for nail makers and a stone-weighted, hand-operated drill, the first type of pressure drill.

In a corner of the *pewter shop* is a caldron for melting the alloy. Nearby is the foot-power lathe for burnishing, and about the shop are plate and spoon moulds of bronze. The pewter on display in the window and on the shelves along the side wall is of the last period of general use.

The *tinsmith's shop* is modeled after one kept by J. B. Sweet at Pittsfield, New Hampshire, and is equipped with tools to turn out almost any article in small tinware. Specimens of the craft are also shown. In the rear is a stove-pipe anvil.



Candle Maker's Shop

In the *candle maker's shop* are illustrated the two most common methods of making candles, the dip and mould. Two types of dip are shown, that in the corner being built like a scale with weights to balance the candles and regulate their size; and that in the center representing the rotary type. Candle moulds are shown on work benches, along with other examples of candle-making equipment. Several tallow caldrons are in this shop.

FURNITURE

There are some 6,000 pieces of furniture in the museum collections which go back to the European sources of inspiration (Chippendale, Sheraton, Hepplewhite and others), carry through to modern times and are particularly finely representative of the craftsmanship of the early American masters—Savery of Philadelphia, Johnson of Salem, Goddard of Newport, Saxon of Boston and Phyfe of New York.

The central unit, left and right of the Edison cornerstone, is given over almost entirely to Philadelphia Chippendale furniture—chairs, bureaus, secretaries, tables. The cases of the two grandfather clocks at the left, one of mahogany and one of curly maple, likewise are the work of Philadelphia cabinetmakers.

Continuing left through the long arcade is a section filled with Queen Anne and William-and-Mary furniture, including a very rare oval-top Queen Anne dining table with a set of six chairs and equally rare William-and-Mary highboy, lowboy and slant-top desk.

In the extreme left section (Congress Hall) is Colonial furniture, most of it of great rarity. Several of the bridal chests and the trestle-foot table, for instance, are as fine as anything of their kind to be found.

The arcade on the right of the central unit leads to sections balancing those on the left. The first of these contains Hepplewhite and Sheraton furniture, and the one at the extreme right of the building has many beautiful examples of the work of Duncan Phyfe.

Along the walls of the arcades, on which handsome mirrors and banjo clocks of American make are hung, we find various recesses and cases containing displays of sundials and sandglasses, table silver, porcelain, fine china and the like.

Many of the objects seen here are of considerable historic as well as intrinsic interest. There are, for instance, a Chippendale table that once was the property of John Hancock; a New England high-back chair of 1710, once the property of Lady Pepperell; a corner cupboard owned by Governor Saltonstall of Massachusetts; a Queen Anne chair (1730) owned by General

Joseph Warren; a gate-legged table at which Lafayette frequently dined and while a guest in the home of Joseph Reynolds at Bristol, Rhode Island, when the famous French soldier had his headquarters there.

Since musical instruments, particularly of the type that was to develop into the modern piano, came to be cherished at least as much for their fine cabinetwork as for the opportunity they afforded for sometimes questionable communion with the Muse, the extremely comprehensive collection of these instruments in the museum ties in naturally with the furniture exhibits.

First in the sequence of piano-like instruments is a Fifteenth Century virginal, which was placed on a table or the player's lap and operated through a little jack which plucked the strings as the keys were struck. Next is another "string-plecking" instrument—a spinet, but this had a cabinet of its own—a beautiful piece of craftsmanship, triangular in form. The harpsichord, of the type used by Bach, is next in line and marks a great mechanical advance over its predecessors. Then come pianofortes, from 1780 on, many of them in beautiful Sheraton and Duncan Phyfe cases. And so to the piano, of gradually increasing size and range of keyboard, and of the square, upright and "grand" types that marked changing modes and fancies.

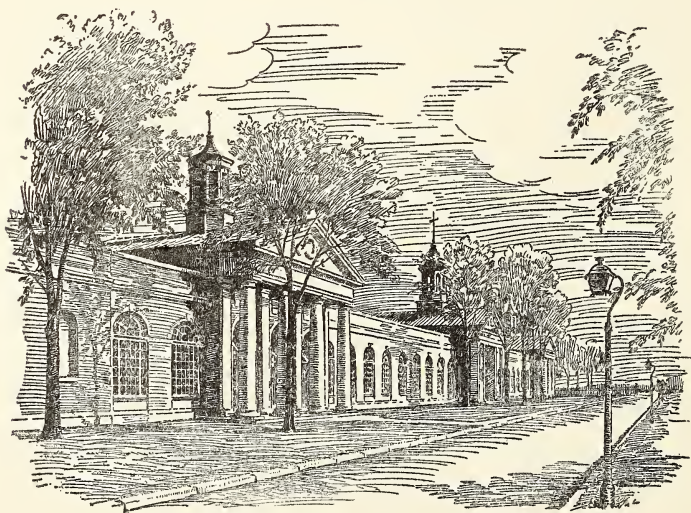
These show the normal stage in piano development, but there are many "freaks" as well, to illustrate man's inventive ingenuity in seeking answers to problems of resonance, tone, construction and design.

The organ is the next sequence, with representative types of all periods, beginning with the so-called "galloper" or lap-melodeons, with piston keys and piano keys; then the "galloper" set on a stand of its own, and thus to the subsequent metamorphosis of the organ into a combined musical instrument and piece of furniture—seraphines, melodeons and harmoniums—all the reed-types from 1840 on and many in exquisite cases of mahogany or rosewood. The development of the pipe organ, because of its great size, is illustrated only by a few of the smaller types such as were constructed for small churches and mansion homes. Among these is one placed in a baby grand piano console, the first instrument of its kind so constructed.

Next comes the mechanical group in which is shown the complete evolution of the Swiss music box (from the smallest types, with their tiny steel-toothed brass rolls tinkling tunes from steel combs, to the great multi-rolled instruments, with tympani, organ, trap-drum and bell attachments and their drum-, castinet- and bell-playing automats).

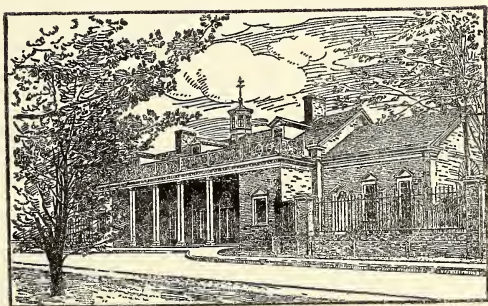
Other exhibits include harps, and a comprehensive collection of band instruments, gathered by a New York bandmaster. The several hundred pieces in this group, used by famous bands from the Civil War period on, show the evolution of wood-wind instruments, the French horn, saxophone, trombone and other "brass" types, and include the "serpents" which supplied the first "natural" bass in orchestral music.

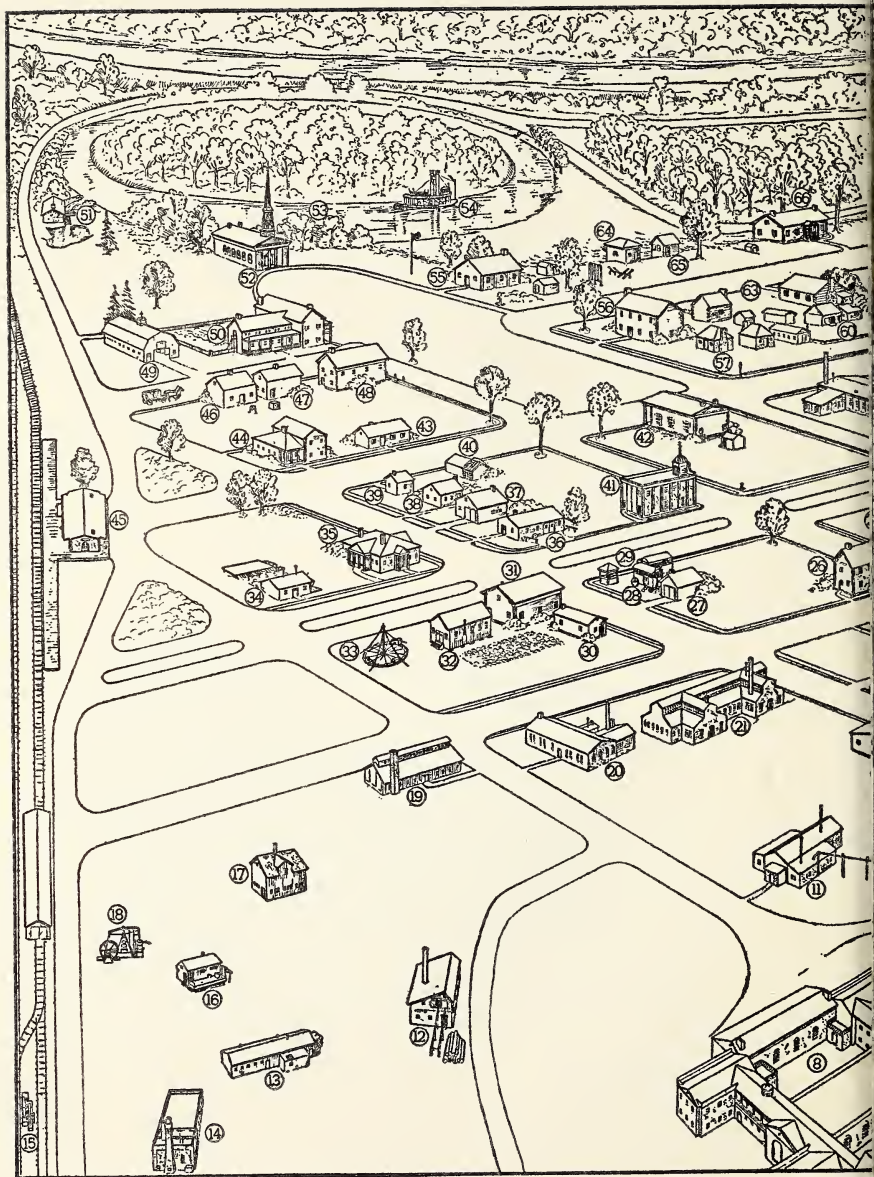
Even in the department of music Thomas Edison is not unrepresented in the institute that bears his name. He collected some 10,000 scores of classic, semi-classic and modern music, and this collection, now in the Edison Institute, constitutes one of the largest sheet music libraries in the world.



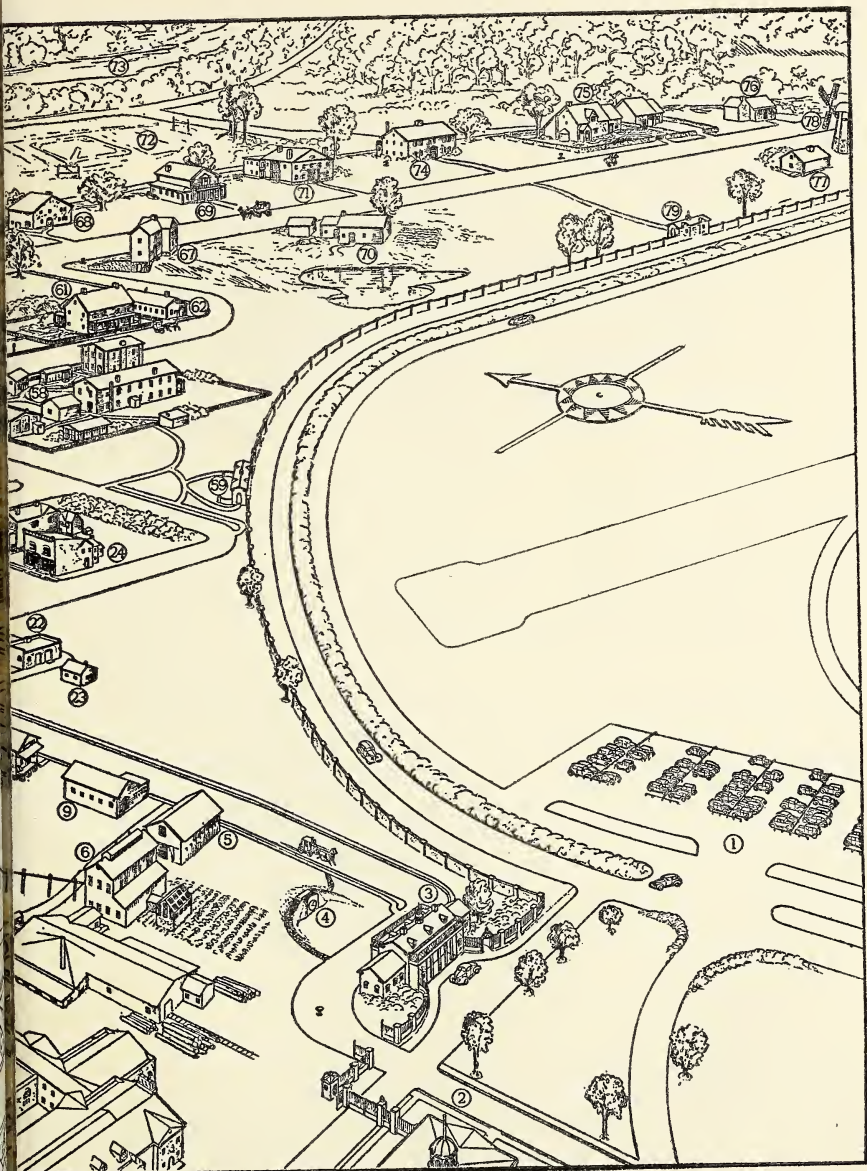
West Facade, Edison Institute Museum

THE VILLAGE





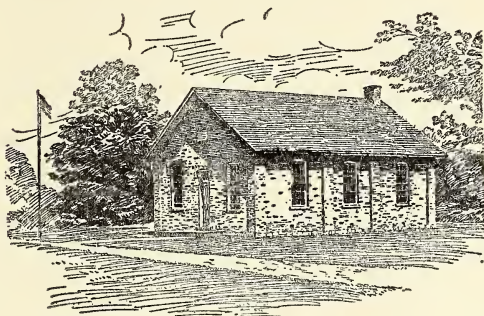
Identification of buildings as shown



above will be found on page 26

IDENTIFICATION *of* BUILDINGS

- | | |
|---|-------------------------------------|
| 1—Parking Lot | 40—Tintype Studio |
| 2—Edison Institute Museum | 41—Sir John Bennett's Jewelry Store |
| 3—Gate Lodge | 42—Town Hall School |
| 4—Floral Clock | 43—Post Office |
| 5—Village Barn | 44—Plymouth House |
| 6—Chemical Plant | 45—Smith's Creek Depot |
| 7—Loranger Sawmill | 46—Pioneer Log Cabin |
| 8—Edison Institute School and Gymnasium | 47—Gardner House |
| 9—Early Machine Shop | 48—Waterford General Store |
| 10—Loranger Gristmill | 49—Riding Stable |
| 11—Soy Bean Extraction Plant | 50—Clinton Inn |
| 12—Tripp Sawmill | 51—Stone Mill |
| 13—Brick Factory | 52—Martha-Mary Chapel |
| 14—Village Pottery | 53—Suwanee River |
| 15—Outdoor Engine | 54—Steamer Suwanee |
| 16—Sorghum Mill | 55—Scotch Settlement School |
| 17—Cider Mill | 56—Loring County Courthouse |
| 18—Mine Engine | 57—Slave Huts |
| 19—Sandwich Glass Plant | 58—Menlo Park Group |
| 20—Lapeer Shop | 59—Rest Rooms |
| 21—Armington & Sims Machine Shop | 60—McGuffey School Gardens |
| 22—58 Bagley Avenue Shop | 61—Sarah Jordan Boarding House |
| 23—Annex to Shop | 62—Fort Myers Laboratory |
| 24—Wright Brothers Cycle Shop | 63—McGuffey Group |
| 25—Wright Home | 64—Luther Burbank Office |
| 26—Magill Jewelry Store | 65—Steinmetz Camp |
| 27—Deluge Fire Engine | 66—Stephen Foster House |
| 28—Lunch Wagon | 67—Luther Burbank Birthplace |
| 29—Refreshment Stands | 68—Swiss Watchmakers' Chalet |
| 30—Hank's Silk Mill | 69—Ann Arbor House |
| 31—Plymouth Carding Mill | 70—Edison Homestead |
| 32—Weave Shed | 71—Noah Webster House |
| 33—Merry-go-round | 72—Athletic Field |
| 34—Jumbo Dynamo | 73—River Rouge |
| 35—Rest Rooms | 74—Secretary House |
| 36—Blacksmith Shop | 75—Cotswold Group |
| 37—Kingston Cooper Shop | 76—Cotswold Forge |
| 38—Currier Shoe Shop | 77—Plympton House |
| 39—Toll House | 78—Cape Cod Windmill |
| | 79—Rest Rooms |



Scotch Settlement School

THE VILLAGE SCHOOLS

THE Edison Institute has been described as an educational project, wherein all things combine to teach life and living. Schools have their place in such a program, although just as much is learned outside the school building as within. The lessons from books and on blackboards supplement the actual experiences that are real education.

In Greenfield Village experience with life begins at the commencement of school, rather than at the school commencement. In other words, it starts with the kindergarten. The kindergarten occupies the Ann Arbor House. In the basement is a large airy play room. On the first floor is the library, activity room, kitchen, and a dining room where the sixteen boys and girls have their lunch. The second floor rooms are equipped with cots. Here the rest period is spent. First and second grades attend a log school. Appropriately, this school is

named in honor of *William Holmes McGuffey* whose McGuffey Readers blazed the trail to graded instruction in the pioneer Middle West, and gave to more than one generation an introduction to life, to right conduct and to good literature. Many obtained all their schooling from these books.

The logs of which the school is built were brought from the Holmes farm in Pennsylvania, where Dr. McGuffey was born. The restored log cabin birthplace stands adjacent to the school, and has been equipped with McGuffey furniture.

Although built of logs, the McGuffey School is ultra-modern in its lighting and heating. Artificial illumination is indirect along the upper edges of the walls just below the ceiling. Airconditioned throughout, the building is snugly comfortable in winter and cool in summer. No open chinks admit the January blasts, for the interior is paneled.

The furnishings are old and new. The desk used by the teacher was once used by McGuffey. A fireplace with mantel fills the far end of the room. On the wall are illustrations reproduced from the McGuffey Readers.

The individual desks of the pupils are light, strong and designed to accommodate small bodies in comfort. Those of the smallest tots are lower, permitting their feet to rest on the floor. The combination desk-chair is shaped something like the traditional cafeteria chair, with a book compartment suspended below the flat arm rest. The latter opens, serving as the lid of the compartment.

As it is difficult for little hands to extract pencils, pens or erasers from among these books, a separate sliding drawer has been concealed beneath the chair seat. It is drawn out easily.

The basement is a notable feature of the school. Adapted to recreation use during winter recesses, it also serves as a supplemental classroom. In one corner of the room, pupils form a circle of small chairs to watch slides projected on the screen from a lantern.

On reaching the third grade, the village school pupil leaves the McGuffey School, and moves to the *Scotch Settlement School* or the *Town Hall School*.

These two buildings face the "green," the former

being near the head of the "green," the latter at the foot. There is no historical significance attached to the Town Hall structure, although it presents an interesting architectural addition to the public buildings. Its interior was designed after town halls of half a century ago, the space now being occupied by individual desks.

The *Scotch Settlement School* is a low one-story brick building. Among those who attended it in early days was the youthful Henry Ford. The interior has been restored to resemble as closely as possible that known to Mr. Ford, and at the same time the conveniences have been modernized.

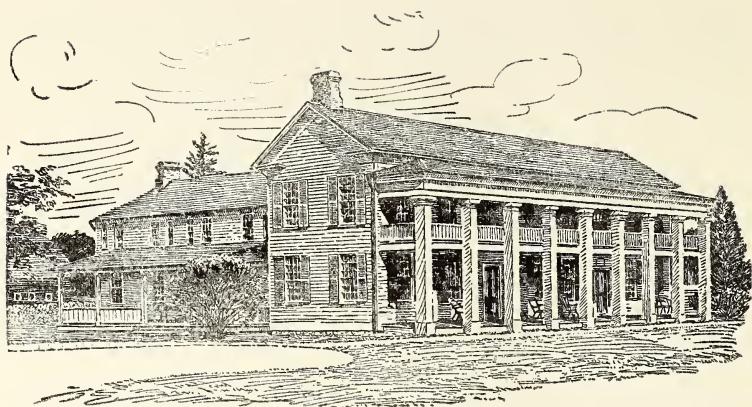
Pupils of the *Town Hall* and *Scotch Settlement* schools, along with those from the high school, are served a hot lunch each noon in the dining room of the *Clinton Inn*. Warm fresh milk is also supplied, as in the case of the *McGuffey* pupils.

Shower baths and lockers for boys are found in the basement of the *Swiss Watchmakers' Chalet*. Outdoor swimming facilities are provided by the "*Suwanee River*" (as the lagoon adjoining the *Stephen Foster Cottage* is named). Dressing rooms for boys are in the basement of the *Luther Burbank* office; and for the girls in the basement of the *Steinmetz Camp Cottage*. In the vicinity of the athletic field are bridle paths for the horseback riding classes.

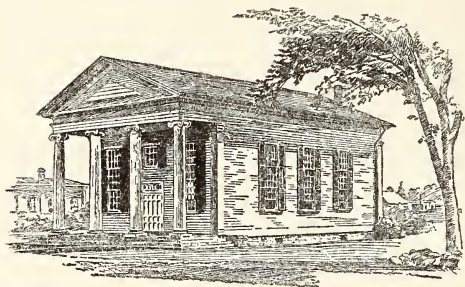
Girls study sewing in the *Stephen Foster House*, making articles for their homes, or to wear. Duties of house-keeping are taught in a girls' club, the *Secretary House*, to be described in more detail under Homes of the Village. Boys study manual training and other handicrafts in the various shops, and weaving is taught girls in an annex behind the *Village Carding Mill*.

When a pupil has been graduated from the seventh grade, he or she goes to the *Edison Institute High School* classrooms in the museum.

In the *Recreation Building* is housed the *Edison Institute of Technology*. Here a small group of young men and women who have been graduated from high school are preparing for engineering and secretarial careers.

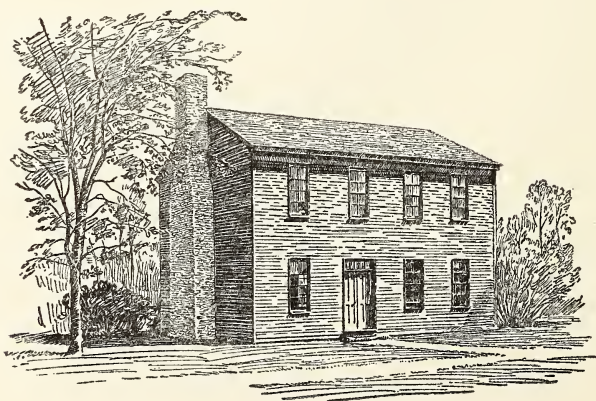


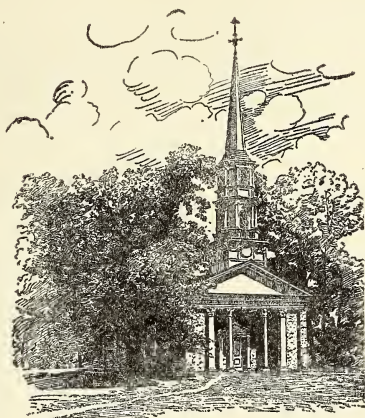
Above—Clinton Inn



Left—
Town Hall School

Below—Logan County
Courthouse





Chapel of Martha-Mary

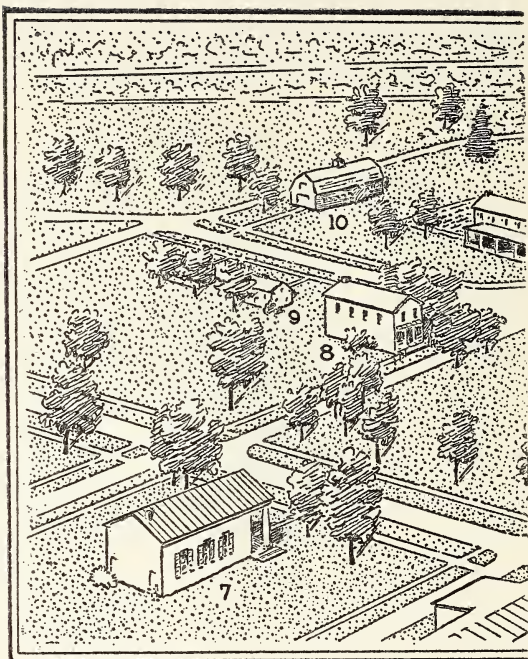
AROUND THE GREEN

THE buildings of Greenfield Village center about the "green" as did those of the Early American communities. About this spot stand the Inn, the Chapel, the School, the Courthouse, the Town Hall and the General Store. Clinton Inn, a typical hostelry of 100 years ago, stood in Clinton, Michigan, on the great Sauk Indian Trail. Early stagecoaches leaving Detroit for Chicago made this their first overnight stop.

The public rooms of the Inn are furnished in keeping with the original furnishings from the *Everyday Parlor* with its rag carpet and Currier and Ives prints to the *Sunday Parlor* with its haircloth covered furniture, lace window curtains and ornamental fireplace. In

BUILDINGS

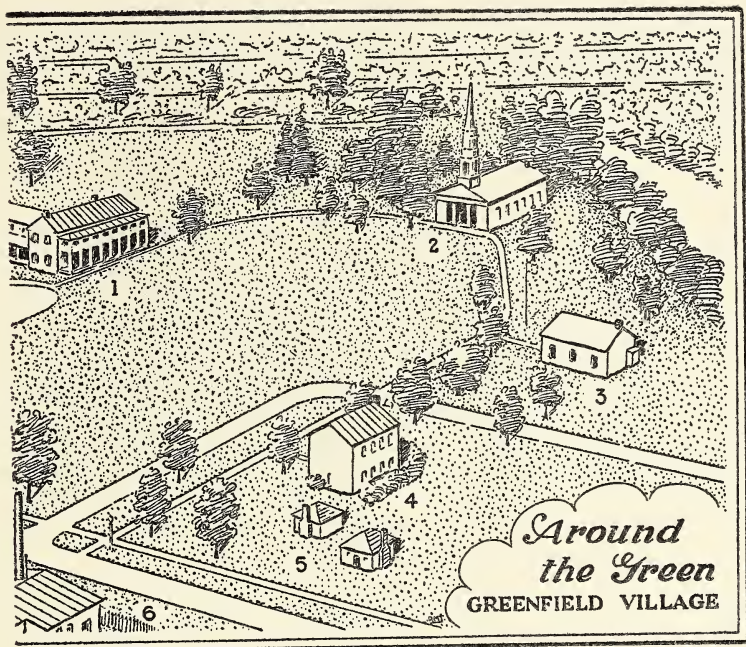
1. Clinton Inn
2. Chapel of Martha-Mary
3. Scotch Settlement School
4. Logan County Courthouse
5. Slave Huts
6. Menlo Park
7. Town Hall School
8. Waterford General Store
9. Gardner House
10. Livery Stable



the kitchen the great fireplace is hung about with cranes and kettles. Its spits, and roasters; its bed warmers and its fly roost hung with dry fruits and vegetables speak of warmth and hospitality and good cheer for weary travelers.

The Chapel of MARTHA-MARY overlooking the "green" was named for the mothers of Mrs. and Mr. Henry Ford. The bricks in the building and the doors are from the girlhood home of Mrs. Ford. In the tower a sweet-toned bell cast by Paul Revere, Jr. announces every schoolday the morning services of the village school children. These are broadcast on Wednesday mornings over a national network. On Sunday non-sectarian services are held by the village staff.

The Brick School which stands across the "green" from the Inn was originally in the old Scotch Settlement near Dearborn. Although it is today one of the schools



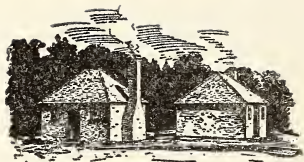
*Around
the Green*
GREENFIELD VILLAGE

of the Edison Institute, it is furnished as it was nearly 80 years ago. It has the old-fashioned stove, the kerosene lamps, wooden blackboards, the desks with carved initials, and even the old hand-bell stands on the teacher's desk. But modern lighting, heating and ventilation have been installed.

Nearby is the LOGAN COUNTY COURTHOUSE from Illinois, where it was erected in 1840. For eight years Abraham Lincoln when a young man practised law here. The lower floor was used for court with the judge's bench at one end and a fireplace at the other.

During the Edison celebration, October 21, 1929, Herbert Hoover lighted the fire in this fireplace. It has burned ever since.

Several pieces of Lincoln furniture are in the room, the original corner cupboard, fashioned by young "Abe" and his father, Lincoln's wardrobe, the table from a

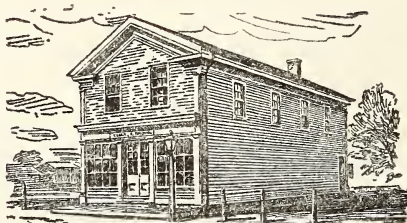


Slave Huts

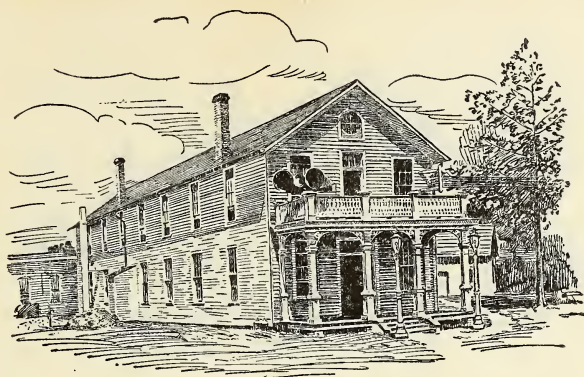
nearby courthouse where he once practised, a number of chairs and other pieces from his Springfield home, and in one corner the chair in which he was seated on the night of his assassination in a Washington theater.

In the shadow of the *Courthouse* are two **SLAVE HUTS** from the *Hermitage Plantation* near Savannah, Georgia. They are typical in size and furnishings of the slave homes of the old South, and are made of brick-bats from a brickyard on the plantation.

Across the "green" from the *Courthouse* is the *General Store*, a white, frame structure that served as the principal store of *Waterford, Michigan*, after its erection in 1854. Its equipment and stock are typical of that period. Original counters, spice and coffee grinders, cracker barrels, hoop-skirts, fancy jewelry, slates and comic valentines are among the articles to be seen here.



Waterford General Store



The Laboratory

MENLO PARK

IN 1876 Edison built a two-story clapboard structure in Menlo Park, New Jersey, and made it his laboratory. Menlo Park is situated between Rahway and Metuchen on the Pennsylvania Railroad. Here Edison achieved those brilliant discoveries that resulted in the creation of the electrical industries and many others, giving us a new world.

The *Laboratory*, the main place of research, was surrounded by several other buildings. There were an *Office and Library* of brick, two stories tall; the *Little Glass House*, a wooden shed where the glass parts of the incandescent lamp were blown; the *Carbon Shed*, where the carbon buttons for Edison's telephone transmitters were made; the *Carpenter Shed*, housing also the machine for manufacturing gas for illuminating purposes; the

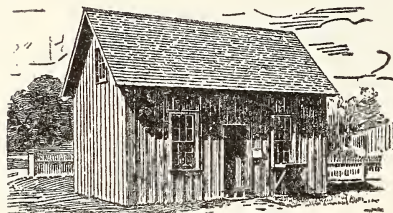
large one-story brick *Machine Shop* where Edison developed his early generators and electric light equipment.

Inclosed in the rectangular yard surrounded by the white picket fence are buildings reconstructed from or replicas of those used by Edison at Menlo Park. The buildings are in their original orientation.

Visitors entering the yard will note the reddish color of the soil, different from that in the rest of the village. This is due to the fact that Mr. Ford has surrounded the buildings with soil from Menlo Park, New Jersey.

THE BUILDINGS

The *Little Glass House* was originally used as a photographic studio by Edison.



Little Glass House

During 1879, this building became the shop where the first successful lamp bulb was blown. This is the original structure. The attic has been restored to appear as when the glass blower lived there; among other

things it contains a zither such as he played.

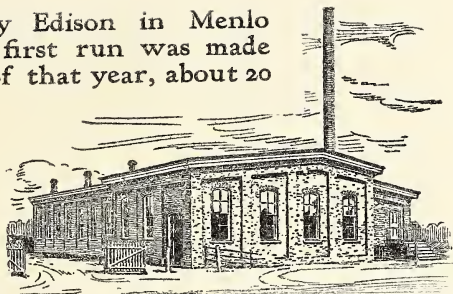
In the yard was the pit where broken apparatus was thrown. The pit has been reproduced and alongside is a glass case containing relics recovered from the original dump. Other relics may be observed in the case in the *Glass House* and on the shelves on the first floor of the *Laboratory*.

Adjoining the long glass case beside the *dump* is a smaller one preserving the stump of a tree that stood in the Menlo Park yard in 1878-9 and many years afterward.

The *Machine Shop* is historically the first central station for incandescent lighting in the world. It houses early Edison dynamos, the original boiler from Menlo Park, the first electric light chandeliers and other relics. Adjoining it is an annex containing a battery of generators such as furnished current for lighting the town of Menlo Park.

The *Electric Railway*, first of its kind in the United

States, was built by Edison in Menlo Park in 1880. The first run was made over it during May of that year, about 20 passengers enjoying the ride. In the glass shelter may be seen the original electric locomotive as restored, together with replicas of the two cars that the locomotive hauled over the short track.



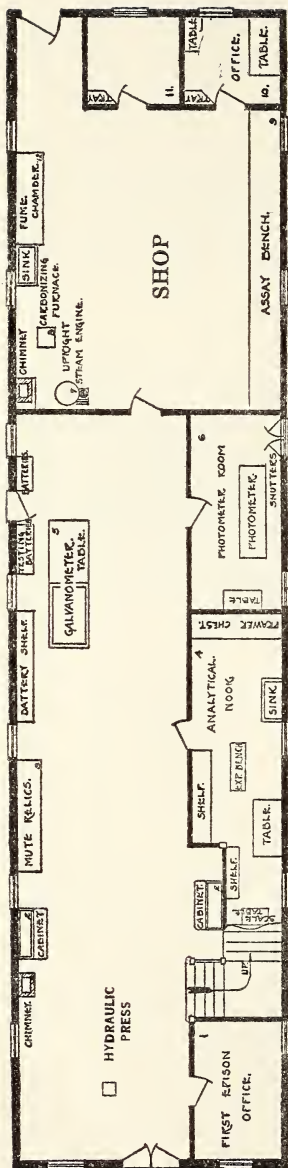
Machine Shop

Two small buildings, the *Carpenter Shed* and the *Carbon Shed*, adjoin the *Laboratory*. In the former was housed the distillation plant for the manufacture of gas. In the latter a row of kerosene lamps was caused to smoke at night, forming lampblack for use in the manufacture of telephone transmitters. During the night the watchman made frequent trips to the shed to scrape out the soot.

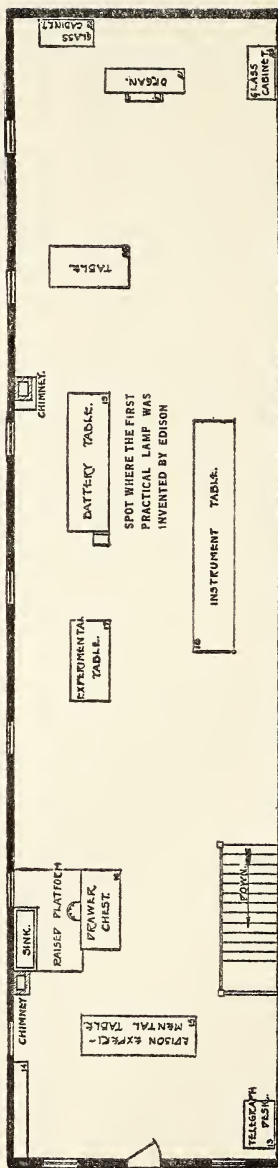
THE LABORATORY

On the second floor of the *Laboratory* Edison produced the first practical incandescent lamp and worked out his electric lighting system. The first phonograph along with numerous other inventions, including the microphone and telephone transmitter, were developed by Edison in this building. Francis Jehl, who assisted Edison at the invention of the light, is in charge of the *Laboratory*. Restored to appear as it was in Edison's day, it contains original instruments and apparatus, as well as models of many of his inventions.

Many relics were salvaged by Henry Ford while he was directing the excavation of the old Menlo Park site. Among them were the broken parts of the old laboratory mortar. He personally cemented the parts together and presented the restored mortar to Edison in 1929. The bowl may be seen on the second floor of the *Laboratory*. Edison placed the bowl on the chest of drawers where it had always stood. Seated in his old chair near this



Floor Plan, Ground Floor, Edison Laboratory, Menlo Park



Floor Plan, Second Floor, Edison Laboratory, Menlo Park

cabinet, he demonstrated to Mr. Ford how he prepared his experimental carbon filaments. The articles on the chest remain as he arranged them at that time.

The historic spot where the incandescent lamp was invented may be seen in the center of the room, where an upright wooden stand supports a mercury air pump. Close by is the armchair in which the inventor sat while he watched the "life" tests of experimental lamps until the final one that ended October 21, 1879, marking the discovery of the first practical lamp.

At the re-enactment of the invention on its fiftieth anniversary, Edison sat in the same chair and President Hoover and Mr. Ford stood in the background. On the stepladder was Francis Jehl operating the pump as he did 50 years before. Mr. Jehl is today the sole survivor of the small group that assisted Edison in the laboratory at the time of the lamp invention.

At the corner of Woodbridge and Christie streets is the *Office and Library*. This building had been dismantled. Only one shutter of the original was located, but in each new shutter a part of the old has been placed. The brickyard that supplied Edison for the original structure supplied the brick with which the building has been restored.

THOMAS ALVA EDISON

Thomas Alva Edison, inventor, scientist and discoverer, was born in Milan, Ohio, on February 11, 1847, and died at West Orange, New Jersey, on October 18, 1931. In 1854 his parents moved to Port Huron, Michigan. While he was growing up here he evinced an exceptional desire for knowledge and experimenting. His active spirit also led him into many boyish enterprises.

In 1859 young Edison became a train boy selling newspapers and candies on trains of the Grand Trunk Railway running between Port Huron and Detroit.

In 1862 he printed a weekly newspaper, the *Herald*, and started a laboratory in one of the baggage cars attached to the train. In this same year, while alighting one day at the Mount Clemens station, he saw the little son of J. U. Mackenzie, the station master, playing on a

side track as a boxcar came rolling on. Throwing down his newspapers, he dashed to the rescue of the child. And the station master out of gratitude for this merciful deed taught him telegraphy.

Edison soon learned the art and toward the end of 1862 obtained his first job as an operator in Port Huron. Then the wanderlust seized him, and he worked his way as journeyman telegraph operator in many cities of the Middle West. During these years he also studied and experimented.

In 1868 he came to Boston as an operator for the Western Union, which was his last job of the kind. Edison acquired the reputation of being one of the fastest and most proficient telegraph operators in the country.

In Boston he made his first patented invention, the "vote recorder." In 1869 we find him in New York City. Here opportunity presented itself at the Gold & Stock Telegraph Company's offices, where the master instrument got out of order and only Edison was able to set it right. A good position at \$300 a month was the result.

Later in the year he went into partnership with a firm of telegraph engineers, which shortly, however, became absorbed by the Western Union Telegraph Company. He soon improved the stock ticker and added other inventions, among them the "unison stop," an important device in stock ticker operation.

Edison sold his inventions for \$40,000 and went to Newark, New Jersey, where he opened a shop and laboratory at 10-12 Ward Street (1870). While he was manufacturing Gold & Stock tickers and carrying on various experiments, he was also assisting C. L. Sholes in making a practical typewriter. This happened in 1871. In 1872 he perfected his automatic telegraph system and in 1873 went to England to demonstrate it. In 1874 he perfected his duplex and quadruplex systems of telegraphy, the latter saving about \$20,000,000 in lines. For this patent he received \$30,000.

In 1874 he discovered the electromotograph principle and employed it to make a telegraph relay, the patent for which brought him \$100,000, and in 1879 he used the same idea in the construction of his chalk or loud receiving telephone, which brought him \$150,000. In 1875

he invented the Edison electric pen, the father of auto-graphic duplication. This patent and that of the mimeograph were sold to the A. B. Dick Company of Chicago. His inventions included many other systems of telegraphy, among which were the printing, chemical or automatic, harmonic, and acoustic systems; district signal boxes; sextuplex, facsimile, multiplex, Roman letter automatic systems and, some years later, train telegraphy—a system of communication from a moving train.

In 1876 Edison moved to Menlo Park, New Jersey, in order to devote himself entirely to research work. What he accomplished there, resulting in inestimable gifts to mankind, is known to all the world. In early 1877 he invented the carbon telephone transmitter, which has formed the companion to the Bell telephone receiver everywhere. At the same time he invented the carbon, the condenser and the dynamic microphones used in radio transmission. In this same year he invented the phonograph.

In 1878 he invented the central station supply system for the electrical transmission of light, heat and power, and in 1879 the first practical incandescent lamp; the first efficient constant potential with low-resistance armature dynamo; the first constant potential electric motor for the 110-volt lighting circuit; the first electric light meter, lamp socket, switches, fuses, insulating tape—in short, a complete system of current distribution. In 1880 he made the first electric locomotive having a highly efficient motor with low-resistance armature and a magnetic field composed of a shunt and series winding that is compounded.

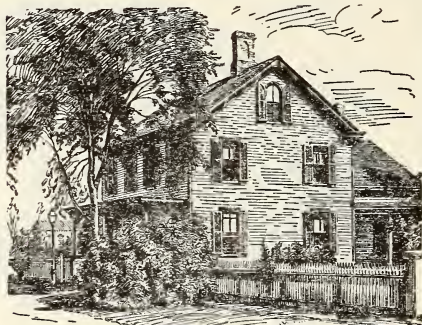
In 1883 he discovered the "Edison Effect Lamp," which years later became the basis of the radio tube. In 1885 he invented a high frequency wireless system employing directional and non-directional antennas (U. S. patent No. 307,031). This patent was sold some years later to G. Marconi when the latter commenced his great researches in wireless. In 1891 Edison invented the first practical motion picture camera and in 1900 the alkaline storage battery.

During his long life Edison contributed many other inventions to man's comfort and happiness.

OTHER EDISON BUILDINGS

Most of the Edison buildings are located on or near *Christie Street*. In addition to Menlo Park there are other structures marking important phases of the inventor's life and work. Across *Christie Street* and a short distance beyond the *Office and Library* is a dwelling which stands in the village as it originally stood in Menlo Park.

Mrs. Sarah Jordan's boarding house was the home of several Edison workmen. Wires were run to it from



Sarah Jordan's Boarding House

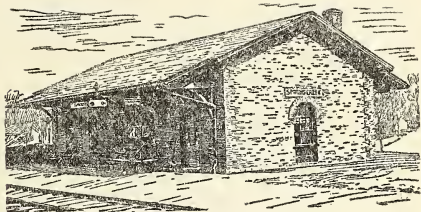
the Machine Shop for the first successful demonstration of the electric light outside the Edison workshops. Thus it is the first house lighted by his incandescent lamp. It is now used during the school year as the luncheon place for pupils of the primary grades.

Adjoining the boarding house is the laboratory used at Fort Myers, Florida, during the winter months. The structure was brought to the village from Florida and set up in 1928 and on the completion of this, Edison came to Dearborn and started the steam engine to set it in motion in its new home. It was in this laboratory that much of his work in seeking a suitable plant from which to extract rubber was done.

Looking across the meadow from this point one may see a white, rambling dwelling, the *Edison Homestead*. This is the oldest of the Edison buildings for it was the home of his grandfather in Vienna, Ontario, near the north shore of Lake Erie. Samuel Edison, the father of the Inventor, grew to manhood in Vienna, and in this house was married to Nancy Elliot, the village school teacher, who became the inventor's mother.

During the Rebellion of 1837 Samuel Edison sided against the government and a price was placed on his

head. While the soldiers were ransacking the homestead, he fled across the winter snow to the American boundary and escaped into the United States. After wandering along the border as far south as Ohio, he settled in Milan.

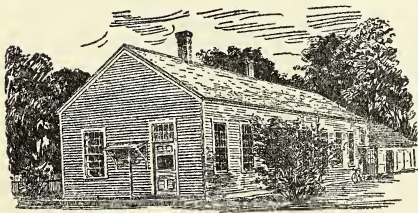


Smith's Creek Depot

Two other buildings of special significance in the Edison story lie at the north end of *Christie Street*. One of these is the railway depot from *Smith's Creek, Michigan*, where young Edison, a boy of 15 years, was ejected from the *Grand Trunk* train on which he worked as a news agent. While he was experimenting with chemicals in the baggage car, some phosphorous accidentally set fire to the car's contents, whereupon he and his laboratory were dropped off by the angry conductor. This depot stood originally on the *Detroit-Port Huron* route not far from *Port Huron*.

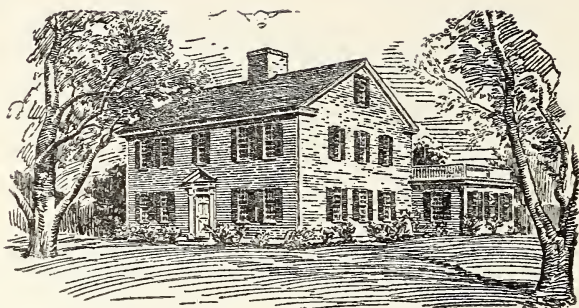
On October 21, 1929, in celebration of *Light's Golden Jubilee*, the old-time train, now in the museum, drew up at this platform to discharge its passengers. The *President of the United States* took Edison by the arm and led him to the same platform on which he had been deposited by the conductor 67 years earlier.

Another Edison structure is important because of its contents. It stands between the Depot and the *Carding Mill* and shelters the sole remaining generator of the battery Edison used when he first lighted *New York City* in 1882. Because of its size it was called the *Jumbo Dynamo*, and is a unique link in the development of heavy current engineering, marking the first time a steam engine had been coupled directly to a generator.

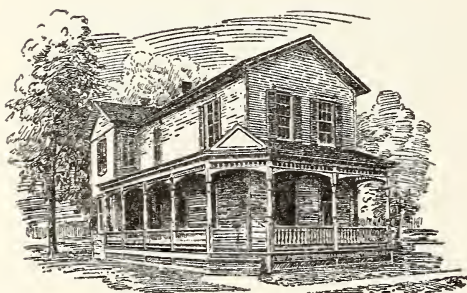


Fort Myers Laboratory

HOMES OF THE VILLAGE

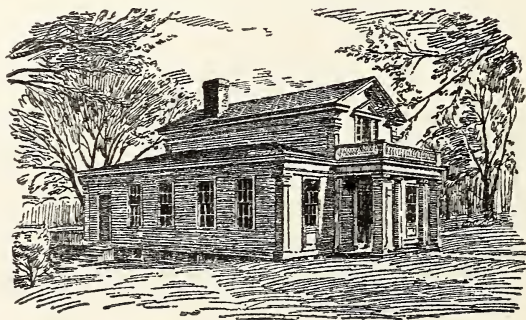


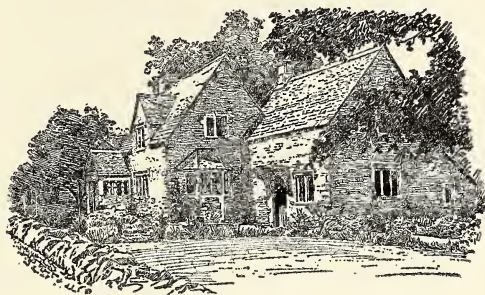
Above—Secretary House



*Left—
Wright Birthplace*

*Right—
Ann Arbor
House*





Rose Cottage, Cotswold Group

HOMES OF THE VILLAGE

IN TRACING the development of the American home, Greenfield Village has gone back to old England for its beginnings, and has brought from the Cotswold region a cottage group, illustrating the home of our English forefathers in the first half of the Seventeenth Century. Inhabitants of that region derived most of their revenue from sheep-raising, and their homes were built largely of native sandstone and limestone.

In keeping with their simple rugged habits, the furniture is sturdy, simply constructed of stout oak, with severe lines. The fireside settle in the first room dates back to the early 1600's, about the time of Charles I. Near it is a hutch table-chair combining the features of chest, seat and table, the back being hinged on pegs at the arm.

On top of the side-table rests a Bible chest with the bun feet so popular at the beginning of the Seventeenth Century. The trestle table against the west wall is

also a historic type, its top being permanently attached.

Lighting methods of the time are illustrated by several different forms, including many types of rush lamp, in which dried rushes or rushes soaked in oil were clamped and lighted. Another method is illustrated in the examples of the Betty lamp, which used a wick floating in a reservoir of grease. Sometimes these were fastened to spiked rods that could be thrust into a roof beam, or a ratchet allowed convenient adjustment.

The leaded windows of the cottage are early examples of the glass-maker's art, two of the windows containing bull's-eyes caused when the spinning rod was separated from the glass.

In front of the fireplace in the second room is a kidney iron or spit for roasting meat. The fireplace contains a pothook suspended by a chain, less convenient than the crane. The seat of the fireside settle in this room is hinged, and the space beneath was used for storage or as a woodbox. The high back helped to keep cold drafts from the shoulders of those sitting there. The table in this room is an early drop-leaf type, put together with wooden pegs, and has the spiral twist leg popular in the Jacobean period.

Across the lane from the *Cotswold* group, not far from the *Cape Cod Windmill*, is the *Plympton House*, oldest of the American homes in the village and one of the oldest in the country. Its history goes back to *Sudbury, Massachusetts*, in the Seventeenth Century. Thomas Plympton, first of the family, was in *Sudbury* in 1643 and was slain by the Indians in 1676. Another Thomas Plympton took an active part in the Revolutionary War.

The *Secretary House*, a type of well-to-do family residence of early Eighteenth Century New England, serves as a home economics laboratory for the *Edison Institute* girls, who take turns spending the night here, acting as hostesses, arranging meals, preparing them and caring for the rooms. An instructor lives in the house to advise and help them. Equipment in the pine-paneled kitchen is modernized so that they may learn cooking from the fireplace down to the most modern gas and electric range. A spacious sewing and recreation room has been added in the rear to the original structure.

The *Noah Webster House* was the home of the great American lexicographer while he compiled his dictionary. It stood on the campus of Yale University at New Haven from its erection in 1822 until 1937, when it was removed to make way for more modern buildings. It was then brought to Greenfield Village where it has been re-erected and restored.

Adjoining the *Noah Webster House* is a two-story frame house that for many years was a familiar landmark on the *University of Michigan* campus at Ann Arbor, where Robert Frost, American poet, lived during his tenure of an honorary fellowship. It was built originally for David McCallum about 1833. The building has considerable artistic interest as an example of American architecture under the "Greek revival." The part it plays in the village school system is described on page 27.

Simple, yet stately, the *Foster House* is typical of homes of well-to-do Americans in the early Nineteenth Century. The Stephen Foster House was built about 1815. Stephen Foster's widow lived until 1903, and his daughter until 1935, so that family testimony as to this house is continuous and definite. Of course, the house was not at first famous as Stephen Foster's birthplace, but only as the birthplace of all the Foster boys, so that collateral lines of relatives, besides that of Stephen, knew of this house and recognized it as the birthplace and early home of the Foster brothers. Stephen Foster's daughter, who was 13 years old at the time of her father's death, lived nearby at the time Mr. Ford acquired the house, and said that it was always pointed out by both her father and mother as they passed it, as his birthplace. This daughter's daughter still resides in Pittsburgh and well remembers her grandmother (Stephen Foster's widow) passing the house frequently and saying, "Now, watch when we come to the forks of the road, and I will show you where your grandfather was born." Descendants of Henry Foster (Stephen Foster's elder brother) likewise always knew this house as *their* father's or grandfather's birthplace, and for that reason have presented the old house with many Foster heirlooms. The house itself sustains these claims under the most critical examination. Besides its personal

interest it is a beautiful representative of its times.

On an adjoining corner is the birthplace of Luther Burbank, famous horticulturist, from Lancaster, Massachusetts. In it he was born in 1849.

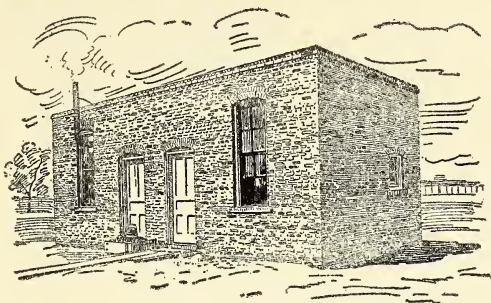
Two examples of pioneer American log cabins are in Greenfield Village, representing different periods of time and development. The oldest, the birthplace of William Holmes McGuffey, marks the late Eighteenth and early Nineteenth Centuries when the settlers came westward across the Alleghenies to carve out western Pennsylvania and Ohio. It stood originally in Washington County, Pennsylvania, on the Holmes homestead, and is furnished with McGuffey furniture.

Younger in years is the Michigan pioneer log cabin located not far from Clinton Inn. In early days it stood near the boyhood home of Mr. Henry Ford, and was the abode of a hermit and naturalist. It is furnished in keeping with that period. In the rear is an outdoor oven and an upright hollow log used for smoking meats.

Two other early Michigan homes are situated in Greenfield Village near the log cabin. Beside it is the Gardner House, a typical pioneer home of a century ago about the time Michigan became a state. It was also originally located near Dearborn. The downstairs consists of two rooms, a kitchen and living room on one side, and a bedroom on the other, separated by a central fireplace. Attic and cellar complete the dwelling.

The third early Michigan home in this group is the Plymouth House, which stands on the corner of Christie and Main streets. It was built about the middle of the Nineteenth Century in Plymouth, Michigan, and represents another type of modest Middle-Western home. At the present time it serves as the office of the village architect.

An example of a middle Nineteenth Century Ohio home is being erected next to the Wright Cycle Shop. It was the Dayton birthplace of Orville Wright and his sister Katharine and the house in which they and their brothers, Reuchlin, Lorin and Wilbur, grew up.



58 Bagley Avenue, Detroit, birthplace of first Ford car

SHOPS OF THE VILLAGE

TO THOSE who have found delight and much of interest in wandering through the back streets of Greenfield Village, that section containing the small shops and handicraft industries is most popular. Commencing at the Post Office and Apothecary Shop on Christie Street, the buildings stretch along Main Street and around Bagley Avenue to the Sir John Bennett's Jewelry Shop and the Wright Brothers Bicycle Shop. Beyond these lie still another group of industries, shops and mills, extending all the way to the village entrance.

On weekdays craftsmen may be found in most of these plying the early trades. In the Tintype Studio an artist of pioneer days is able to reproduce not only the tintype, but also the Daguerreotype and Ambrotype. In the Toll House Shoe Shop, a shoemaker fashions shoes by hand. Nearby a cooper produces many objects of wood without the use of nails. In a corner smithy, a blacksmith shoes horses.

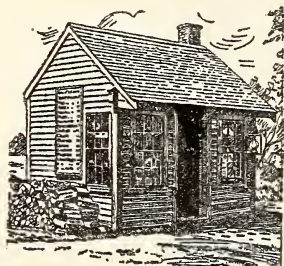
The white clapboard Post Office and Apothecary Shop from Phoenixville, Connecticut, was built in 1803. Doorway and shutters are of two layers of wood fastened with hand-forged nails to prevent warping.



Village Post Office

Hinges, latches, iron bars for the shutters, and hooks to hold them back are original handmade fixtures. In the many-paned windows are blue bottles and brown flasks. Over the door is a sign bearing "F. I. C."—Fire Insurance Company. Rough and unfinished inside, hand-split laths show through an unplastered section of wall. Cards mailed here go out with an appropriate postmark.

In the Apothecary Shop are shelves bearing bottles, drugs and liquors for medicinal purposes, tonics and elixirs. Back of the wood stove is a case of drawers filled with herbs. Atop the case is a jar for leeches, and tall bottles of colored water that marked the apothecary's trade. On the left is a counter with a small display case of perfumes at one end, and a screen back of which the chemist mixed his cures at the other. A small glass peephole enabled him to keep an eye on customers.



Toll House Shoe Shop

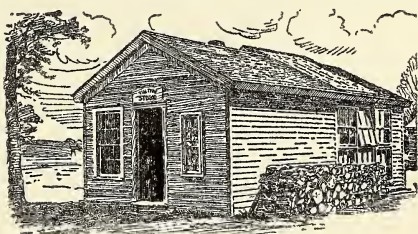
The Toll House Shoe Shop at the corner of Christie and Main streets was built about 1828 on the banks of the Merrimac River, beside a covered bridge linking Rocks Village with West Newbury, Massachusetts. John Greenleaf Whittier was fond of sitting in the shop. He wrote in "The Countess" of "The toll-man in his cobbler's stall." The first toll-collector made shoes as a

sideline, and each succeeding collector followed that trade. Today one hears the shoemaker's hammer from the little shop, but no longer does its wielder collect a fare from travelers. The toll rates are posted outside on a big sign nailed against one wall. On a corner hangs an outdoor coal oil lamp that once attracted the night

traveler. Inside are many little things of interest: a rabbit gun, a telescope, the cobbler's violin and shelves filled with shoes made by the craftsman working there.

William Currier, a shoemaker in Newton, New Hampshire, worked in the *Currier Shop* more than 60 years ago. In Merrimac Valley where Newton is located, were hundreds of these little shops. Farmers built them in their barnyards and in winter turned out, with help, as many as 25 pairs of women's slippers daily. Currier must have had one of the first shops with machines. A steam engine drove the stitching machine and buffer. Thread processed in a small vat of homemade wax, warmed by a kerosene burner, the rack upon which shoes were dried (they were sewed together wet, being more pliable), cutting patterns and a leather-splitting machine are some of the objects shown. The cobbler hung finished uppers and lowers on wires from the ceiling. He was an industrious craftsman; worked all day, and then lighted his smoky kerosene lantern and worked late into the night.

The almost lost arts of the Tintype, Daguerreotype, and Ambrotype flourish in Greenfield Village. An old-time artist makes tintypes of visitors in *The Studio*, with equipment recovered from garrets and trunks. The wooden tintype camera makes four pictures at once. Sitting for a portrait, the visitor is aided by the use of a rest which holds the head steady, but first, use is made of the "priming room" where hair is slicked down. Tintypes of many famous persons that have sat here may be seen on the walls.



Tintype Studio

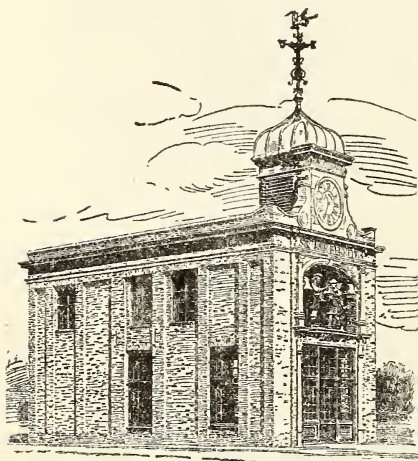
In the Greenfield Village *Cooper Shop*, the old-time cooper built watertight hogsheads for commerce, barrels for shipping fruits or vegetables, buckets for maple sap, and wooden pails for every home. Smaller articles are built today in the same shop. Fastened without glue or nails, the staves are bound together by hickory hoops,

and the bottoms fitted into grooves in the sides. The cooper's tools are the froe, with which he splits logs into boards and shingles; the joiner for smoothing edges; and the draw knife. On the *schnitzelbank*, or shaving horse, he sits and shapes staves with the draw knife, his feet against a lever which closes the vise in which the staves are held.

The great semicircular fireplace held green wood and the stout oak casks to dry. The cooper was a valued craftsman, but like many others he has gone from the industrial scene. That his work was well done is proved by the hundred-year-old sap buckets in the shop. The structure was built in *Kingston, New Hampshire*, soon after the Revolution, and is the oldest American craft shop in *Greenfield Village*.

In the *Blacksmith Shop*, sparks fly, and the anvil's ring is heard for a considerable distance. The fire of the forge is kept glowing red by air forced from the bellows which the smith pumps with one hand. Forge and anvil are at the left of the door. The ox-sling is on the right; used to support those short-legged animals, or to hold an unruly horse. This once typical building of the early American scene stands in the shade of a spreading chestnut tree, as did the one made famous by the poet Longfellow.

Approaching the *Sir John Bennett Jewelry Shop*, the visitor sees Gog and Magog, giant effigies of old London, standing in a wide, deep alcove in the second story above doorway and windows. They announce the time to the village, every quarter hour, striking on different toned bells with hammers held in their mighty hands. Dressed in Ro-



Sir John Bennett Jewelry Shop

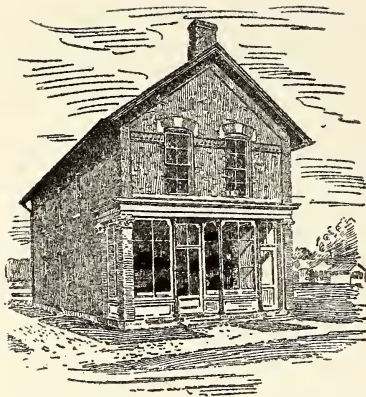
man warrior's garb, *Gog and Magog* step from legends of two giants captured by the Romans and chained to London's gates during Caesar's invasion. Two smaller figures assist the giants at their timekeeping, ringing four bells in all.

Sir John Bennett was not dependent on the effigies for fame. He held watchmaking appointments to royalty and government offices in the last century, and his firm is famous in London today. In the shop some of his watches are displayed with other watches and jewelry. Much of the facade and *Gog and Magog* are originally from the English jeweler's building at 65 *Cheapside, London*. The dignified, high-ceilinged interior is a duplicate that London visitors say is exact. Mahogany wall cases and counters contain clocks and silverware, both old and new. The brass lantern clock was made in 1630. Down a glass-doored channel in the wall, weights from the clockworks slowly descend. There are three of them; one controls the bell in the tower, another the big clock, and the third weighing 700 pounds gives power to *Gog and Magog*.

In all there are three buildings in Greenfield Village devoted to clocks and watchmaking. Near the corner of the lane opposite the *Edison Homestead* is the *Swiss Watchmakers' Chalet*, reproducing the type used in the Jura Mountains of the Neuchatel district in Switzerland. The interior includes a shop with tools and equipment for watch manufacture. Its present location was selected as being in keeping with that of the original dwelling shop. A sundial is on the front of the building.

The jewelry store and watch shop at 444 *Baker Street* was operated 50 years ago by Mr. Magill. In one of the two front windows stands a jeweler's bench, and on it is a rack from which hang watches taken in for repairs or regulating. Inside are polished wood shelves and counters filled with clocks and watches. Grandfather clocks stand at the sides, and against the red cloth covering on the walls hang the once popular octagon-shaped pendulum clocks. A shining brass and copper gas chandelier hangs from the center of the ceiling.

In the back is a workroom furnished with tools and a bench where Henry Ford cleaned and repaired timepieces as a lad of 16. He worked four hours a night for



Baker Street Jewelry Shop

Mr. Magill and made 50 cents, to supplement the weekly \$2.50 earned in the daytime at Flower Brothers Machine Shop.

Through the window, the red brick shed from 58 Bagley Avenue is seen, where the first Ford car was made some years later.

In the late fall of 1893 the Fords, including six-weeks-old Edsel, moved into a house on Bagley Avenue, Detroit, and Mr. Ford equipped the brick shed in the rear with

tools. At that time he was engineer for The Edison Illuminating Company of Detroit. Three lathes and the drill presses in the shop today are the same as were used in the work then. Tools used on the first engine are in boxes and on the shelves. The bricks, windows and two doors are original, and it was over the same type of cobblestone that the first Ford car was driven.

A shrine to the accomplishments of Wilbur and Orville Wright, who started a new era in transportation, is the Cycle Shop where the brothers built bicycles and produced the motor and parts of the first successful airplane. This building, which stood at 1123 Third Street, Dayton, Ohio, was remodeled in 1896 and then occupied by the Wright brothers. Prior to entering the bicycle manufacturing business, they had printed a neighborhood newspaper in Dayton. In the present building the Wright printing equipment was placed in one of the upper rooms and lent to a friend who used it for job work.

Most of the original machinery which the brothers used to manufacture the first airplane has been found with the assistance of Orville Wright and is being replaced in the shop in the exact location where it stood in 1903 when the plane was made. The wind tunnel which the brothers used in making many of their discoveries in aerodynamics is being reconstructed.

The house at No. 7 Hawthorne Street, Dayton, Ohio, in which Orville Wright was born in 1871 and in which the brothers grew up, has been moved to Greenfield Village and placed beside the bicycle shop. Wilbur Wright died in this house in 1912. In 1892, Wilbur and Orville Wright added the front porch and an inside stairway and made other changes to the house. On a neighbor's lathe Wilbur personally turned the big posts and Orville made the small turnings for the porch.

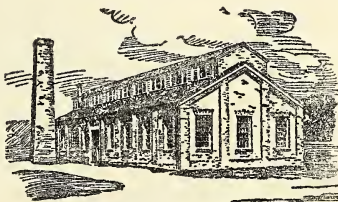
Some of the furniture which the Wrights used in this house has been found and is being replaced in it.

On Main Street just above Bagley Avenue is the *Armington & Sims Machine Shop*, named for two Yankee mechanics, Pardon Armington and Gardiner C. Sims, who operated a shop in the eighties and nineties in Lawrence, Massachusetts. Sims designed, with the help of Armington, a high-speed steam engine, and the two formed a partnership and started production on their new engine. No one, however, seemed to need high-speed engines until *Thomas Alva Edison* came along with a plan to connect one directly to a dynamo. He ordered six engines which were successfully used in the *Pearl Street Station* in New York City.

Some of the old equipment, drafting board, drawing tools, blueprint developing frame and company records and catalogues are of the old firm of *Armington & Sims*.

Behind the *Armington & Sims Shop* in the *Lapeer Foundry* woodworkers repair and rebuild furniture, clock cases, pianos and reed organs. The MacDonald brothers, William and John, the last owners of the shop before its removal, repaired old steam engines and built new parts, following the trade of their father who had built the foundry in 1863. The woodworkers now occupying it are not only employed in repair work, but teach their craft to the village school children.

The *Sandwich Glass Plant* north of the *Lapeer Foundry* was named for the one which produced glass in Massachu-



Sandwich Glass Plant

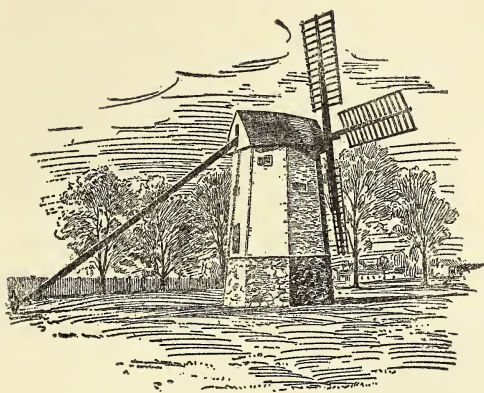
setts more than a century ago at *Sandwich*. The glass blowers fashion useful and ornamental articles, working with glass tubing. Heating a part of the tube to near the melting point, they produce almost any shape by blowing into the open end.

On the western edge of the village is the *Pottery*, center of a proposed ceramics group. The building is not patterned after any particular structure, but was erected as a working unit to show the old craft and new developments for small shops. Modern processing and tempering of clay toward making it ready for use, and the hand method are demonstrated. On a potter's wheel the potter shapes the products of his art, using small instruments at certain times to aid in the fashioning, but depending for the most part upon the skill of his hands. There are two types of wheels, the old hand-operated "kick wheel" and a modern motor-operated wheel. The "kick wheel" is operated by a foot lever. An alternate method of production, moulding pottery, is used also. Coloring is protected by a glaze which must be baked on under high temperature, and because the process sometimes gives off poisonous fumes, the kiln was built outside the shop, between it and the powerhouse.

Not far distant from the Pottery is the brick plant where bricks are made for use in the village.



Wright Brothers Cycle Shop, Birthplace of Airplane



Cape Cod Windmill

MILLS IN THE VILLAGE

IN ADDITION to the handicraft shops, the village contains mills reminiscent of the pioneer days when *wind* and *water*, later *steam power*, did man's work and drove his machinery.

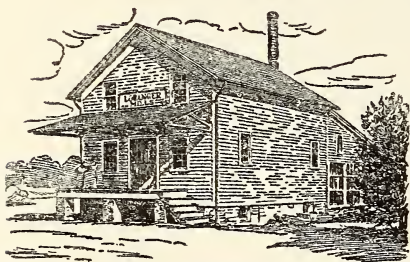
Oldest of these is one of the early wind-mills of America, brought to the village from *Cape Cod* and presented to Mr. Henry Ford and Mr. Edsel Ford by the *Ford dealers*. It stands at the southeast end of the grounds, restored as it was in 1633 when *Pilgrim* settlers erected it near Barnstable on the north side of the Cape to grind their corn.

They built it like those they had seen during their exile in Holland. Young men were induced to become millers by being exempted from taxes and military duty. Winds off the Atlantic and Cape Cod Bay turned the sails

and according to their force, corn might be ground into meal in ten minutes or three hours. The long lever between the roof and the ground is used to turn both roof and sails in the most favorable position.

This mill was moved four times, that being easier than finding a millwright to build a new one. The initials "T. G." and "1782" were carved on one of the beams during a moving. In late years the mill was at West Yarmouth where it was known as the *Farris Mill*. On the second floor above the stone foundation are the millstones, and below, the hoppers and bins which hold the grain and meal.

Westward, two centuries later, when pioneers settled Michigan, the *Loranger Gristmill* was built on a land



Loranger Gristmill

grant near Monroe. Edward Loranger, a brick mason, had come down from his home in Three Rivers, Quebec, to help erect a church. He stayed on in the new country making a living by trading with the Indians. About 1832 he felt a gristmill and sawmill were needed, and he laid

for them a foundation of native stone. He hewed oak timbers for the beams, cut with a broad ax the siding of the building of whitewood, and cut logs for a dam in the river to impound the water for power to turn two mill wheels. Visitors see the mill operating. They can watch the golden streams of corn and wheat pour into the fast turning millstones. Power is had from a steam engine.

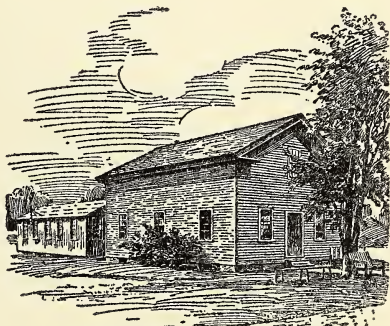
The *Circular Sawmill* which Loranger built adjoining his Gristmill is also in Greenfield Village, nearby. Lumber is cut there for use in construction. Logs are set on a carriage frame on a track and fed into the whirring teeth of the saw. The conveyor and saw are powered by separate steam engines which, with a boiler, are on a lower level, originally the river level. Timber is run into the building on small cars on a narrow gauge track. The old craftsmen, whose skill was in cutting the most

and the best lumber to be had from a log, and their efficiency in keeping the blades sharp and straight are little known to this age. Here their craft is reproduced.

Another *Sawmill* using an upright blade was brought from Franklin Township in Michigan, where it was built in 1855 by J. D. Tripp. It is now on the western edge of Greenfield Village. Much Michigan timber went through this mill which the Tripps owned and operated until 1916, when it was closed. The vertical blade which flashed up and down, suspended between two floors of the building, is being used to cut lumber again.

Textile methods of 75 to 100 years ago, contrasted with those of modern production, may be observed in the *Plymouth Carding Mill*. Near a Colonial hand-loom where once sat a weaver throwing the shuttle back and forth for long hours, watching his pattern grow slowly, are modern knitting machines which produce men's hosiery at high speed. A hand-knitter, a Jacquard loom with its roll of punched cards that determine the pattern before the weaver makes the cloth, and its successor, an automatic loom, show the development between the extremes.

The *Carding Mill* was erected in Plymouth, Michigan, in 1827. When Mr. Ford was a boy he used to accompany his father to Plymouth from the farm near Dearborn with raw wool to be made into "rovings" for his mother to spin into yarn on the wheel at home. A carding machine of the type of the original is in the center of the building today. There are also the little hand carders, flat slabs of wood with thickly-set stiff bristles with which the early settlers combed wool fibers into long rolls to be twisted into yarn on the spindle of their spinning wheels.



Plymouth Carding Mill
(Weave Shed in Rear)

The small building behind the *Carding Mill* is called the "*Weave Shed*" by school children of the *Edison Institute*. They work on the three sizes of hand-loom, using the size fitted to their various ages. The youngsters in the primary grades use the smallest looms which can weave cloth six to eight inches wide and in two colors.

The *Hanks Silk Mill* from Mansfield, Connecticut, was built by Rodney and Horatio Hanks in 1810, corner-wise over a waterway which they had diverted from a stream. The water fell from a great flat rock onto a mill wheel. It was the first power mill to produce silk in America. Elements that have made possible the production of silk in China and Japan have worked directly against the success of Americans and Europeans.

Two additional mills in the industrial section are the *Cider Mill* and the *Sorghum Mill*.

The original machinery of *Hanks Mill* burned, leaving but a few iron parts, but the visitor may see the same type of wooden reels winding the thin strands of silk from the cocoons which bob in a dish of hot water, and the machine which twists the strands into a single thread. A hand-loom is set up near the hearth, and upon it the thread is worked into scarfs and men's hosiery.

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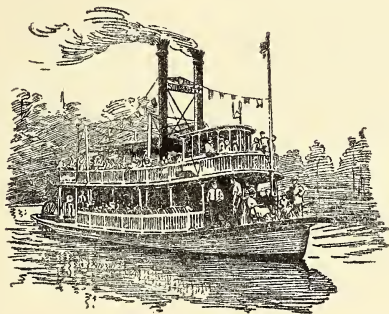
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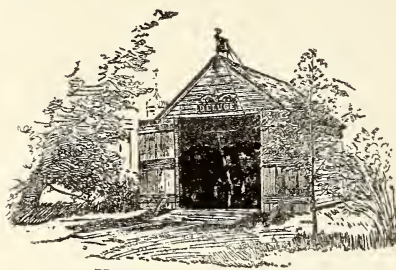
The "Suwanee"

HERE AND THERE

THE stern-wheeler *Suwanee* floats on the quiet waters of the *Suwanee River* in the valley just northeast of the *Village Green*. *Stephen Foster's House* overlooks the lagoon bearing the name of the river his song made famous. The boat was named after one *Thomas Edison* often used during winter months when he worked at *Fort Myers, Florida*. After the original boat had sunk, its engines were raised, and installed on the new *Suwanee* now at *Greenfield Village*. Most southern river boats had two engines, one on each side of the boat, which turned the paddle astern.

VILLAGE FIRE DEPARTMENT

The Village Fire Department is housed in a shed across from the Carding Mill, distinguished by the small



The "Deluge"

bell atop the roof that once called townsmen for fire duty when a blaze was reported, or sighted as it generally could be. The name "Deluge" on a plate above the doorway seems to overrate the mechanism inside, of which Whittier once wrote, "The engine wet all around but spared the

fire." It is of the suction type built in 1845 by the Hunneman Fire Engine Works for Rocks Village, Massachusetts.

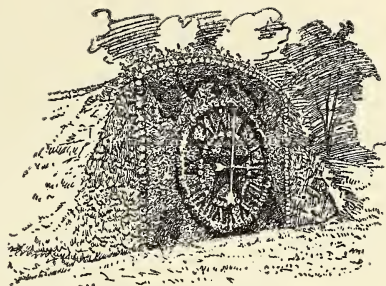
Operation was simple. Firemen pumped the two long levers at each side forcing water from the tub between them through hoses onto the fire. Twelve firemen were needed. They generally volunteered freely, for there was honor in the position, and they dressed themselves in elaborate capes, with fancy belts and highly ornamented hats, thus reducing their efficiency considerably. Each man had his own bucket, decorated to his taste, and he hung it in front of his home to make known the honor that was his.

The visitor can see much of the old equipment of the volunteers hanging on the walls of the shed, or on the engine. The white pine building once housed the village hearse in Newton, New Hampshire.

FLORAL CLOCK

Old Detroiters leaving the Waiting Room to enter Greenfield Village experience considerable pleasure as they recognize the *Floral Clock* planted in a mound of earth across the road. It used to stand at the entrance of *Waterworks Park* where it was built in 1893. *Elbridge A. Scribner*, the park superintendent, conceived the idea of such a clock and built it himself. The dial

design and numerals of the clock are formed by varicolored plants. The hands are turned by a works that may be viewed through a glass door off a tunnel that passes through the mound. Detroit was noted for the clock. Family albums that did not have a group photograph with the clock for

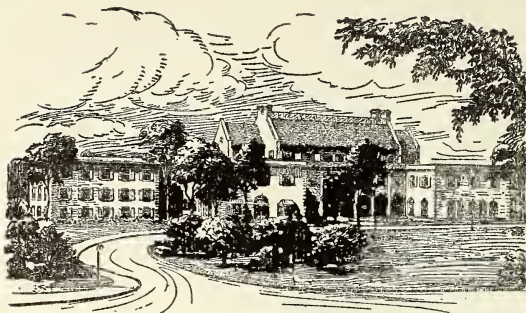


Floral Clock

a background were incomplete. Postcards bearing pictures of it were mailed to all parts of the world. The works originally were turned by water power, but were never very efficient. When they became so inefficient that it was decided to destroy the old landmark, Mr. Ford brought it to Greenfield Village because it had come to mean so much to Detroiters.

Two families of plants make up the dial: *Sempervivum*, commonly known as "hen and chickens," and *Telanthera*, sometimes called "Alternanthera." The *Telanthera* in various colors are used in most of the design. The "hen and chicks" form the border of the innermost circle of the dial, and the outside border. The large center star is of a plant called *Syebaldi*. About six thousand plants are in the dial, and require constant watering and trimming. They are imbedded in soil six inches deep held in place by chicken wire. The clock stands seven and one-half feet high and is ten feet wide.

THE DEARBORN INN



*On Oakwood Boulevard, opposite the Ford Airport
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